

Volume I

EAST BRANCH EXTENSION PHASE II

Draft Environmental Impact Report
SCH No. 2007041017

Prepared for:
Department of Water Resources

August 2008



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EXECUTIVE SUMMARY

ES.1 Introduction

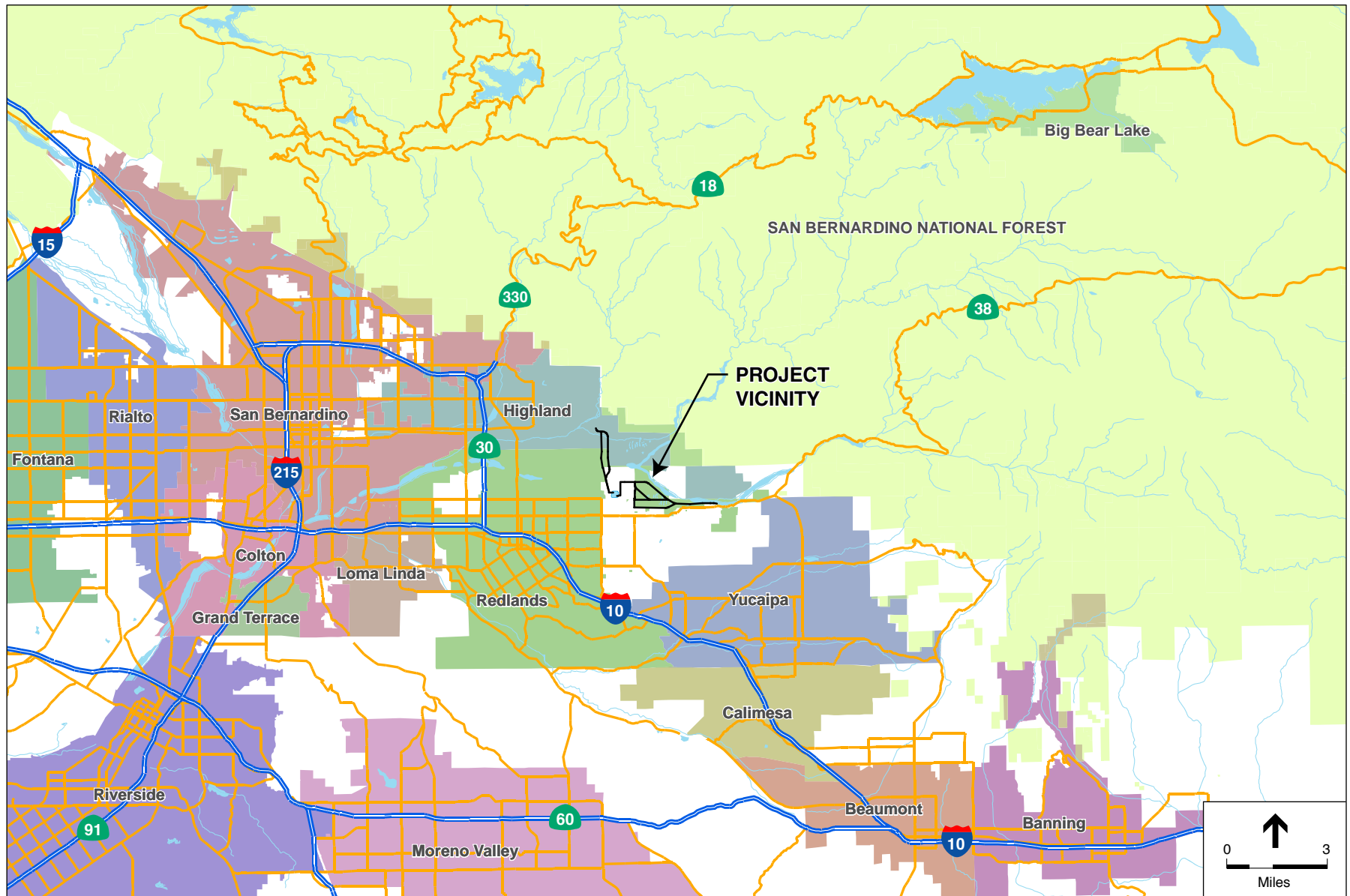
The California Department of Water Resources (DWR) has prepared this Draft Environmental Impact Report (Draft EIR) to provide the public and responsible and trustee agencies information about the potential effects on the local and regional environment associated with construction and operation of the East Branch Extension – Phase II Project (proposed project). This Draft EIR has been prepared pursuant to the California Environmental Quality Act (CEQA). **Figure ES-1** identifies the regional project location, as well as nearby cities and major roadways in the project vicinity.

This document is being circulated to local, state and federal agencies, and to interested organizations and individuals who may wish to review and comment on the Draft EIR. Publication of this Draft EIR marks the beginning of a 45-day public review period, during which written comments may be directed to the address below. Comments on the project should be directed to:

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ES.2 Background

The San Geronio Pass Water Agency (SGPWA) prepared an EIR on their Water Importation Project in 1994 that envisioned a water conveyance system that could convey their maximum annual SWP water volume of 17,300 acre-feet per year (afy) to their service area. In 1995, the SGPWA asked DWR to consider implementation of the Water Importation Project as an Extension of the East Branch of the California Aqueduct. DWR subsequently prepared a feasibility study which determined that it had the authority to include the project into the SWP. The first phase of this system completed in 2003 utilized San Bernardino Valley Municipal Water District's (SBVMWD) existing Foothill Pipeline and Greenspot Pipeline system to convey 8,650 afy of water to the new East Branch Extension Pipeline Phase I, north and east of the Crafton Hills.



SOURCE: SANBAG, 2008; Riverside County GIS, 2007.

DWR - East Branch Extension . 206008.01

Figure ES-1
Regional Location Map

The proposed project would install a new pipeline across the Santa Ana River that would increase water delivery capacity of the system, allowing SGPWA to receive their maximum annual Table A amount of 17,300 afy (8,650 afy greater than the capacity of Phase I), plus additional water amounts that may be available under Article 21. Article 21 water is SWP water available in some years to State Water Contractors during the winter months. The proposed project provides greater system operating flexibility by increasing water storage capacity of the system through construction of the Citrus Reservoir. The additional storage capacity would increase off-peak pumping capabilities, allowing DWR to reduce peak period demand on the electrical grid. Water deliveries to SGPWA would be used to remediate over-drafted groundwater basins as well as meet direct potable demands.

The proposed project would increase the amount of SWP water the SBVMWD could deliver to the Redlands and Yucaipa Valley areas. Water delivered to SBVMWD through the East Branch Extension Phase II would be used for irrigation, groundwater recharge, or recreation, or treated and conveyed to customers for potable use in the Redlands or Yucaipa Valley areas.

In the spring of 2007, DWR prepared and circulated a Notice of Preparation (NOP) to prepare an Environmental Impact Report (EIR) assessing the proposed project. Comments submitted during the NOP review period raised issues on the scope and content of the Draft EIR, including potential project impacts associated with visual resources; geologic and water resources, including potential downstream flooding; biological resources, and traffic and recreation access.

ES.3 Project Objectives

The objectives of the proposed project include the following:

- Increase the conveyance capacity of the East Branch Extension of the California Aqueduct sufficient to deliver SGPWA's maximum annual SWP Table A amount, when available;
- Allow SBVMWD to meet its delivery commitments in the Yucaipa, Mill Creek, and Eastern Valley Areas using SWP water;
- Use SWP water to maintain adequate groundwater level conditions that exist in the Beaumont Storage Unit;
- Enhance operational flexibility of water deliveries to the SBVMWD and SGPWA service areas;
- Provide additional storage capacity to enhance system reliability and allow more off peak pumping;
- Provide sufficient pumping capacity to adequately support system requirements; and
- Decrease the demand on the electrical power grid by decreasing on peak pumping.

ES.4 Project Description

The proposed project would include construction of the following facilities:

- Approximately six miles of pipeline (72 or 78-inch diameter) within one of four proposed alignments

- A 560 acre-foot (af) storage reservoir (Citrus Reservoir)
- A pump station (Citrus Pump Station)
- Expansion of the existing Crafton Hills Pump Station
- An additional pump at the existing Cherry Valley Pump Station

Pipeline Alignments

The proposed project would involve construction of approximately six miles of 72 or 78-inch diameter pipeline. This EIR analyzes four different pipeline alignments: Alternative Alignment 1, Alternative Alignment 2, Alternative Alignment 3, and Alternative Alignment 4. All alignments would begin at the Foothill Pipeline and terminate at Crafton Hills Pump Station (**Figure ES-2**).

Citrus Reservoir

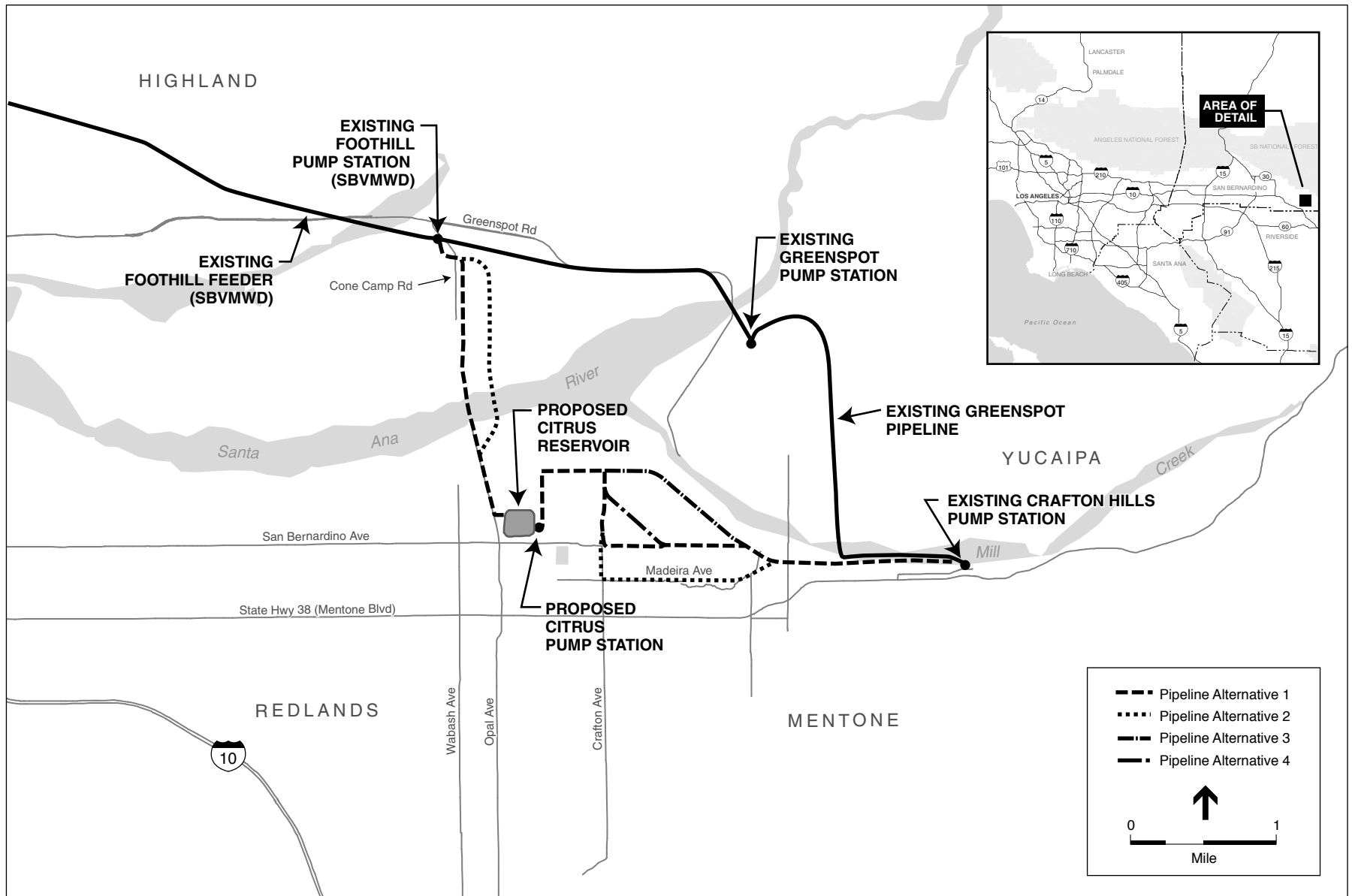
A reservoir providing approximately 560 acre feet (af) of storage would be constructed within an existing citrus orchard, approximately 200 feet north of San Bernardino Avenue (see Figure ES-2). About 35 acres of citrus trees would be removed to accommodate the reservoir. The reservoir would have dimensions of approximately 1,000 feet by 900 feet, covering an area of approximately 21 acres. The reservoir would have a maximum water surface elevation of 1,638 feet above mean sea level (amsl). Given the grade of the site, the reservoir bottom would be about 40 feet below the existing ground surface elevation on the western edge and approximately 70 feet below ground surface on the eastern edge. The area around the edges of the reservoir would be excavated to this elevation to accommodate the pump station and switchyard (described in next section). A berm no greater than six feet may be installed around the perimeter of the reservoir, although maximum water level elevations would be well below the graded surface elevation. The reservoir would be designed with an impermeable liner to minimize the potential for seepage from the reservoir. The reservoir would increase storage capacity providing more operational flexibility.

Citrus Pump Station

The proposed pump station would be located adjacent to the Citrus Reservoir. The pump station would pump water from Citrus Reservoir through the proposed easterly pipeline to the Crafton Hills Pump Station. The pump station, consisting of pumping units, motors, emergency generator, valve and flow meter vault, masonry building, connecting pipeline, and related equipment, would be housed in an approximately 20,000-square-foot, single-story structure. Ten pumps would be installed with a total pumping capacity of 200 cubic feet per second (cfs). The structure would be approximately 30 feet in height; the foundation would be located below existing grade.

Crafton Hills Pump Station Expansion

A 3,500-square foot annex to the existing Crafton Hills Pump Station would be constructed as part of the proposed project to house three new pumps. Upon completion of the proposed project, the Crafton Hills Pump Station would have a total capacity of 135 cfs.



Cherry Valley Pump Station

The proposed project would include the addition of a 24 cfs pump to the existing Cherry Valley Pump Station, bringing the total capacity of the pump station to 56 cfs. There would be no site improvements or building expansion at the Cherry Valley Pump Station because the proposed new pump would be contained within the existing building.

ES.5 Summary of Impacts

Table ES-1, at the end of this chapter, presents a summary of the impacts and mitigation measures identified for Phase II of the East Branch Extension of the California Aqueduct. The complete impact statements and mitigation measures are presented in Chapter 3, Environmental Setting, Impacts, and Mitigation Measures. The level of significance for each impact has been determined using significance criteria (thresholds) developed for each category of impacts; these criteria are presented in the appropriate sections of Chapter 3. Significant impacts are those adverse environmental impacts that meet or exceed the significance thresholds; less-than-significant impacts would not exceed the thresholds. Table ES-1 indicates the measures that will be implemented to avoid, minimize, or otherwise reduce significant impacts to a less-than-significant level.

The impacts associated with the proposed project would occur during the construction phase and the operational phase. Construction impacts would last up to three-years, which could pose significant disruptions to nearby communities, and some of these impacts are considered significant and unavoidable.

ES.6 Analysis of Alternatives

Chapter 3 of this EIR evaluates four pipeline alignment alternatives at an equal level of detail. Chapter 6 of this EIR includes an analysis of six other alternative pipeline alignments (A, B, C, D, E, and F) that were considered as alternatives to the proposed project. Chapter 6 also evaluates an alternative location for the proposed storage reservoir as well as the No Project Alternative.

The alternative analysis in Chapter 6 concludes that the proposed project is the environmentally superior alternative since it results in the least number of environmental impacts while meeting the project objectives. Of the four pipeline alignments evaluated in full detail in the EIR, Chapter 6 concludes that Alternative Alignments 3 and 4 would result in the fewest environmental impacts and would be the environmentally superior pipeline alignments.

ES.7 Organization of this EIR

This Draft EIR has been organized into the following sections:

- ES. Executive Summary.** This chapter summarizes the contents of the Draft EIR.
- 1. Introduction and Project Background.** This section discusses the CEQA process and the purpose of the EIR.

2. **Project Description.** This section provides an overview of the proposed project, describes the need for and objectives of the proposed project, and provides detail on the characteristics of the proposed project.
3. **Environmental Setting, Impacts and Mitigation Measures.** This chapter describes the environmental setting and identifies impacts of the proposed project for each of the following environmental resource areas: Aesthetics; Air Quality; Biological Resources; Cultural Resources; Geology, Soils, Seismicity, and Mineral Resources; Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use, Planning and Recreation; Noise and Vibration; Public Services and Utilities, and; Transportation and Traffic. Measures to mitigate the impacts of the proposed project are presented for each resource area, if necessary.
4. **Cumulative Impacts.** This chapter describes the potential impacts of the proposed project when considered together with other related projects in the project area.
5. **Growth Inducement and Secondary Effects of Growth.** This chapter describes the potential for the proposed project to induce growth.
6. **Alternatives Analysis.** This chapter presents an overview of the alternatives development process and describes the alternatives to the proposed project that were considered.
7. **Mitigation Monitoring and Reporting Program.** This chapter identifies the significant and potentially significant impacts of the proposed project, measures adopted by DWR to reduce these impacts to less-than-significant levels, and reporting tasks for implementation of measures.
8. **Report Preparers.** This chapter identifies authors and consultants involved in preparing this Draft EIR, including persons and organizations consulted.
9. **Acronyms.**
10. **References.**
11. **Glossary.**

**TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
Aesthetics		
Scenic Vistas: The proposed project would have a less- than-significant impact on scenic vistas.	None required.	Less than Significant
Scenic Resources: The proposed project would have no impact on resources within a state scenic highway.	None required.	No Impact
Visual Character: The proposed project would have a less than significant impact on the visual character of the surrounding areas with incorporation of mitigation measures.	AES-1: DWR shall ensure that citrus trees are left in place between the reservoir and adjacent streets and maintained as a visual screen of the Citrus Reservoir and Citrus Pump Station from views on San Bernardino Avenue and Opal Avenue. At least four rows of citrus trees shall be maintained between the roadways and the project components. Trees removed during construction in this visual screen area shall be replaced.	Less than Significant
Light and Glare: The proposed project would have both significant and unavoidable and less than significant impacts regarding light and glare.	AES-2: DWR shall ensure that lighting used for nighttime construction is shielded and directed downward to minimize impacts to neighboring residential areas. The construction contractor shall submit a nighttime lighting plan to DWR for review and approval. AES-3: DWR shall ensure that all exterior lighting is shielded and directed downward to minimize impacts to neighboring residential areas. If necessary to reduce light casting, landscaping shall be provided around proposed facilities. The vegetation shall be selected, placed and maintained to minimize off-site light and glare onto surrounding areas. In addition, highly reflective building materials and/or finishes shall not be used in the design for proposed structures.	Night construction would be significant and unavoidable. Other light and glare impacts would be less than significant with mitigation.
Air Quality		
Consistency with Air Quality Management Plans: The project would not conflict with or obstruct implementation of the applicable air quality plan.	AQ-1: DWR shall ensure that contractors implement a fugitive dust control program pursuant to the provisions of SCAQMD Rule 403.[1] AQ-2: DWR shall ensure that construction equipment is properly tuned and maintained in accordance with manufacturer's specifications. AQ-3: DWR shall ensure that contractors maintain and operate construction equipment so as to minimize exhaust emissions. During construction, trucks and vehicles in loading and unloading queues would turn their engines off when not in use to reduce vehicle emissions.	Less than Significant

[1] SCAQMD Rule 403 requirements are detailed in Appendix B.

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
	<p>AQ-4: Electricity from power poles rather than temporary diesel- or gasoline-powered generators shall be used where power is available within 100 feet of construction area.</p> <p>AQ-5: In accordance with the California Air Resource Board's Idling Vehicle Rule, DWR shall ensure that construction vehicles are prohibited from idling in excess of five minutes, both on- and off-site.</p> <p>AQ-6: DWR shall ensure that coatings and solvents used in the project are consistent with applicable SCAQMD rules and regulations.</p> <p>AQ-7: Dust control measures such as wetting or use of soil binders shall be implemented on haul roads in front of residences on Cone Camp Road periodically (a minimum of 3 times daily) throughout each construction day to minimize dust emissions at the closest sensitive receptors.</p> <p>AQ-8: Construction vehicle speeds would be no greater than 15 miles per hour passing residences on Cone Camp Road.</p> <p>AQ-9: Wheel washers shall be installed where vehicles exit the construction site onto paved roads.</p> <p>AQ-10: Haul vehicles shall be covered or shall comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.</p>	
<p>Violation of an Air Quality Standard: The project would emit air pollutants in daily quantities that could exceed SCAQMD significance thresholds during construction.</p>	Implement AQ-1 through AQ-10.	Significant and Unavoidable
<p>Cumulative Air Emissions: The proposed project would result in a significant and unavoidable adverse impact to cumulative air quality.</p>	Implement AQ-1 through AQ-10.	Significant and Unavoidable
<p>Effects on Sensitive Receptors: The proposed project would result in a significant and unavoidable impact to sensitive receptors.</p>	Implement AQ-1 through AQ-10.	Significant and Unavoidable
<p>Odor Impacts: The proposed project would not create objectionable odors that would significantly affect a substantial amount of people.</p>	Implement AQ-5.	Less than Significant

TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Significance after Mitigation
Greenhouse Gas Emissions: The proposed project would result in increased greenhouse gas (GHG) emissions	None required.	Less than Significant
Biological Resources		
Sensitive Species Habitats: The proposed project would have a less than significant effect on riparian habitats or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS with implementation of mitigation measures.	<p>BIO-1: DWR shall have a qualified biologist conduct a pre-construction spring/summer floristic inventory and rare plant survey of the selected alternative to determine and map the location and extent of special-status plant species populations within the construction right-of-way.</p> <p>BIO-2: DWR shall minimize impacts on special-status plant species by reducing the construction right-of-way through areas with documented occurrences of special-status plant species.</p> <p>BIO-3: DWR shall stake, flag, fence, or otherwise clearly delineate the construction right-of-way that restricts the limits of construction to the minimum necessary to implement the project that also would minimize impacts on special-status plants and RAFSS habitat.</p> <p>BIO-4: DWR shall salvage and stockpile the top 12 inches of soil in the construction zone, including plant material and duff for use in the restoration efforts.</p> <p>BIO-5: DWR shall prepare and implement a special-status species and RAFSS habitat restoration plan, approved by the USFWS and CDFG for unavoidable temporary impacts on special-status plants and RAFSS habitat that includes at a minimum the following measures:</p> <ul style="list-style-type: none"> • The results of the floristic inventory and rare plant survey that documents the location and extent of special-status plant species occurrences and quantifies the temporary and permanent impacts based on acres of habitat, individual plants, and/or other means to clearly articulate the unavoidable impacts. • A restoration plan for areas of temporary impact that includes: <ul style="list-style-type: none"> – Goals and objectives for the RAFSS and special-status plant species restoration plan that establishes the quantifiable criteria for successful implementation and completion of the restoration plan. – A salvage and replacement program for the top 12 inches of surface material and topsoil including plant material and duff. The program will identify soil preparation requirements including grain size that will need to be engineered or amended on site to match to the greatest extent feasible the existing surface soil conditions. – A salvage and replanting program for perennial special-status species. – An invasive plant species maintenance, monitoring, and removal program. – Success criteria that establishes yearly thresholds for growth and reestablishment of RAFSS habitat. – Success criteria that establishes yearly thresholds for growth and establishment of special-status plant species on an acreage extent of occurrence or per plant basis. 	Less than Significant

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
	<ul style="list-style-type: none"> – Success criteria that establishes the ultimate threshold for meeting the goals, objectives, and FESA/CESA permit conditions. – A five-year maintenance and monitoring plan to ensure successful implementation of the restoration plan and meeting the goals, objectives, and FESA/CESA permit conditions. <p>BIO-6: DWR shall prepare and implement a special-status species and RAFSS habitat compensation plan, approved by the USFWS and CDFG, for unavoidable permanent impacts on special-status plants within RAFSS habitat that includes at a minimum the following measure:</p> <ul style="list-style-type: none"> • Purchase of compensatory mitigation lands or credits at a USFWS and CDFG approved conservation bank at a minimum 2:1 ratio (or that required by the USFWS and CDFG permit conditions) for the preservation in perpetuity and dedication in deed restriction, conservation easement, or some other suitable land conservation instrument over RAFSS habitat with known occurrences of Santa Ana River woolly-star and slender-horned spineflower. <p>BIO-7: DWR shall have a qualified biologist conduct a pre-construction protocol survey for the SBKR within the selected alternative alignment to determine and map the location and extent of SBKR occurrence(s) within the construction right-of-way.</p> <p>BIO-8: DWR shall have a qualified biologist conduct a pre-construction spring/summer active season general reconnaissance and trapping surveys for the special-status ground dwelling species within the selected alternative alignment to determine and map the location and extent of special-status species occurrence(s) within the construction right-of-way.</p> <p>BIO-9: DWR shall minimize impacts on SBKR and other special-status ground dwelling species by reducing the construction right-of-way through areas of potential occurrences.</p> <p>BIO-10: DWR shall stake, flag, fence, or otherwise clearly delineate the construction right-of-way that restricts the limits of construction to the minimum necessary to implement the project that also would minimize impacts on special-status wildlife species and RAFSS habitat.</p> <p>BIO-11: DWR shall install a silt fence or some other impermeable barrier to SBKR to exclude SBKR and other small wildlife species from entering the active work areas. Exclusion fencing can be limited to areas of documented occurrences of special status wildlife. Exclusion fencing shall be required during all nighttime construction activities.</p> <p>BIO-12: If approved by the USFWS, DWR shall have qualified biologists permitted or otherwise approved by the USFWS conduct a pre-construction SBKR trapping and relocation effort to minimize take of the SBKR during construction.</p> <p>BIO-13: If approved by the USFWS, DWR shall have qualified biologists permitted or otherwise approved by the USFWS conduct construction monitoring to capture and relocate SBKR out of harms way as an effort to further minimize take of the SBKR during construction.</p> <p>BIO-14: DWR shall have a qualified biologist conduct pre-construction and construction capture, salvage, and relocation effort to remove special-status ground dwelling wildlife species, and other common species, out of harms way to minimize impacts on these species.</p>	

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
	<p>BIO-15: DWR shall prepare and implement a special-status wildlife species and RAFSS habitat restoration plan as a part of that specified for special-status plants in Mitigation Measure BIO-5, approved by the USFWS for unavoidable temporary impacts on special-status wildlife species and RAFSS habitat that includes at a minimum the following measures:</p> <ul style="list-style-type: none"> • The results of the pre-construction surveys that documents the location and extent of special-status ground dwelling wildlife species occurrences and quantifies the temporary and permanent impacts based on acres of occupied habitat, and/or other means to clearly articulate the unavoidable impacts. • A restoration plan for areas of temporary impact that shall be consistent with that prepared for the special-status plant species in Mitigation Measure BIO-5 and that includes at a minimum: <ul style="list-style-type: none"> – Goals and objectives for the RAFSS and special-status wildlife species restoration plan that establishes the quantifiable criteria for successful implementation and completion of the restoration plan. – An invasive plant species maintenance, monitoring, and removal program. – Success criteria that establishes yearly thresholds for growth and establishment of suitable SBKR RAFSS habitat on an acreage basis. – Success criteria that establish the ultimate threshold for meeting the goals, objectives, and FESA permit conditions. – A minimum five-year maintenance and monitoring plan to ensure successful implementation of the restoration plan and meeting the goals, objectives, and FESA permit conditions. <p>BIO-16: DWR shall prepare and implement a special-status wildlife species and RAFSS habitat compensation plan, approved by the USFWS for unavoidable permanent impacts on SBKR and special-status ground dwelling wildlife species occurring within RAFSS habitat that includes at a minimum the following measure:</p> <ul style="list-style-type: none"> • Purchase of compensatory mitigation lands or credits at a USFWS approved conservation bank at a ratio of 2:1 or as required by the USFWS and permit conditions for the preservation in perpetuity and dedication in deed restriction, conservation easement, or some other suitable land conservation instrument over RAFSS habitat with known occurrences of SBKR. This compensatory mitigation can be satisfied under the same habitat acquisition/conservation credit program under Mitigation Measure BIO-6 as approved by USFWS and compatible for both the impacted plant and wildlife species and RAFSS habitat. <p>BIO-17: DWR shall have a qualified biologist conduct a pre-construction nesting season protocol survey for the coastal California gnatcatcher within the selected alternative to determine and map the location and extent of nesting coastal California gnatcatcher occurrence(s) within the construction right-of-way.</p> <p>BIO-18: DWR shall have a qualified biologist conduct a pre-construction spring/summer active season general reconnaissance for nesting/roosting special-status mobile bird and bat species, and other nesting birds within the selected alternative alignment to determine and map the location and extent of special-status species occurrence(s).</p>	

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
	<p>BIO-19: DWR shall avoid direct impacts on nesting coastal California gnatcatchers and any nesting birds located within the construction right of way. This could be accomplished by establishing the construction right of way and removal of plant material outside of the typical breeding bird season (February 1 through August 31).</p> <p>BIO-20: If construction and vegetation removal is proposed for the bird nesting period February 1 through August 31, then active nest sites located during the pre-construction surveys shall be avoided and a non-disturbance buffer zone established dependent on the species and as approved by the USFWS and CDFG. Nest sites shall be avoided with approved non-disturbance buffer zones until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.</p> <p>BIO-21: If a natal bat roost site is located during pre-construction surveys, it shall be avoided with non-disturbance buffer zone established by a qualified biologist until the site is abandoned.</p> <p>BIO-22: DWR shall minimize impacts on documented locations of nesting coastal California gnatcatchers and any nesting birds by reducing the construction right-of-way through areas of known occurrences.</p> <p>BIO-23: DWR shall stake, flag, fence, or otherwise clearly delineate the construction right-of-way that restricts the limits of construction to the minimum necessary to implement the project that also minimize impacts on special-status bird and bat species, and RAFSS habitat.</p> <p>BIO-24: DWR shall prepare and implement a special-status bird and bat species and RAFSS habitat restoration plan, approved by the USFWS for unavoidable temporary impacts on special-status bird and bat species and RAFSS habitat as a part of that specified for special-status plants and ground dwelling wildlife in mitigation measures BIO-5 and BIO-15. The plan shall include the results of the pre-construction surveys that documents the location and extent of nesting/roosting special-status bird and bat species and quantifies the temporary and permanent impacts based on acres of occupied habitat, and/or other means to clearly articulate the unavoidable impacts. Compensatory mitigation for the coastal California gnatcatcher can be satisfied under the same habitat restoration and enhancement measures and acquisition/conservation credit program described under Mitigation Measures BIO-6 as approved by USFWS and compatible for both the impacted plant and wildlife species and RAFSS habitat.</p> <p>BIO-25: During initial Santa Ana River diversion and dewatering, a qualified biologist shall be onsite to capture and relocate any Santa Ana speckled dace or other fish species that may be within the dewatered construction area. The relocation site selected by the biologist shall have similar habitat characteristics as the construction site prior to dewatering.</p>	
<p>Wetlands and Waters of the U.S./State:</p> <p>The proposed project would have a less than significant effect on federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means with implementation of mitigation measures.</p>	<p>None required.</p>	<p>Less than Significant</p>

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
Wildlife Movement Corridors: The proposed project would have a less than significant impact on wildlife movement corridors with implementation of mitigation measures.	BIO-26: The active Santa Ana River channel shall be restored to pre-construction width, contours, and gradient following construction to insure that no barriers to the free upstream and downstream movement of aquatic life occur after construction.	Less than Significant
Local policies, ordinances, and Habitat Conservation plans: The project would be consistent with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, with implementation of mitigation measures. Also the project would be consistent with the provisions of adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan with implementation of mitigation measures.	Implement BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, and BIO-6.	Less than Significant
Cultural Resources		
Archeological Resources: Construction of proposed facilities would have a less-than-significant impact on known or unknown cultural resources with mitigation.	CR-1: Once an alternative alignment has been selected, known archaeological sites along that alternative alignment will be evaluated further by a qualified archaeologist to determine their potential significance. The qualified archaeologist shall prepare a report evaluating each known archaeological site and noting whether the site could be significant. The report will determine whether additional evaluation would be required prior to the destruction of each site. DWR shall consult with the SHPO to determine the eligibility of resources as historic properties, and the effect of the proposed project on identified historic properties. DWR shall implement additional data recovery if requested by SHPO. CR-2: DWR shall narrow the construction zone to avoid known archaeological resources where feasible. If appropriate, prior to construction, a qualified archaeologist shall mark exclusion zones around known archaeological sites that can be avoided to ensure they are not impacted by construction. CR-3: In the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and DWR shall consult with a qualified archaeologist to assess the significance of the find. If any find is determined to be significant, representatives of DWR and the qualified archaeologist would meet to determine the appropriate course of action. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards.	Less than Significant

TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Significance after Mitigation
Historical Resources: Construction of proposed facilities would have a less-than-significant impact on historical resources with mitigation.	CR-4: DWR shall avoid impacting existing buildings within the former Lockheed Propulsion Company property.	Less than Significant
Native American and Buried Cultural Resources: Construction of proposed facilities would have a less-than-significant impact on unknown buried cultural resources with mitigation.	CR-5: If human remains are discovered during construction activities, no further disturbance to the site shall occur until the County Coroner is notified. If the coroner determines the remains to be Native American, the coroner shall notify the Native American Heritage Commission within 24 hours. The Native American Heritage Commission shall identify the person or persons it believes to be the Most Likely Descended of the deceased. Under the amended 5097.98, the Most Likely Descended is required to make recommendations for treatment of any remains. Department of Water Resources shall cease construction activities at the discovery site until the remains have been removed and the site cleared by Native American Heritage Commission and the County Coroner.	Less than Significant
Paleontological Resources: Construction of proposed facilities would have a less-than-significant impact on paleontological resources with mitigation.	CR-6: In the event of an accidental discovery of fossil resources, work in the immediate vicinity of the find shall cease until a qualified paleontologist has determined the appropriate treatment of the find in accordance with Society of Vertebrate Paleontology Guidelines.	Less than Significant
Geology, Soils, Seismicity, and Mineral Resources		
Surface Rupture: The proposed project would not be located in areas susceptible to surface rupture.	None required.	Less than Significant
Seismic Ground Shaking: Strong seismic ground shaking would subject the proposed project to a less-than-significant impact.	None required.	Less than Significant
Seismic Ground Failure including Liquefaction: Seismic ground failure including liquefaction would subject the proposed project to a less-than-significant impact.	None required.	Less than Significant

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
Landslides or other Geologically Unstable Area: Landslides and the presence of other geologically unstable areas would subject the proposed project to a less than significant impact.	None required.	Less than Significant
Soil Erosion and Loss of Topsoil: The proposed project would result in a less-than-significant impact on soil erosion.	Implement HYDRO-1.	Less than Significant
Expansive Soil: Expansive soils would subject the proposed project to a less than significant impact.	None required.	Less than Significant
Soil Suitability for Septic System: The proposed project would require site specific septic system design.	GEO-1: A percolation test shall be conducted at the location of the proposed septic system. The results of the percolation test shall be used to design a functional septic system for the Citrus Pump Station. The design of the system shall meet the standards established by San Bernardino County Division of Environmental Health Services.	Less than Significant
Mineral Resources: The proposed project would have a less than significant impact on the availability of known mineral resources.	None required.	Less than Significant
Hazards and Hazardous Materials		
Soil or Groundwater Contamination During Excavation: The project would have a less-than-significant impact contaminating soil or groundwater during excavation with mitigation.	HA-1: DWR shall collect soil samples within the pipeline right-of-way west of Crafton Avenue to the Mill Creek levee and within the citrus orchard. The samples shall be analyzed for VOCs, organophosphate pesticides, and dibromochloropropane. The number of samples and sampling intervals shall be sufficient to accurately assess the soil quality along the pipeline corridors. If concentrations of target analytes are detected at concentrations considered to be a potential health threat, the County and the SARWQCB shall be notified and impacted soil shall be removed or remediated in accordance with applicable state or county requirements. HA-2: DWR shall incorporate into contract specifications the requirement that, in the event that evidence of potential soil contamination, including soil discoloration, noxious odors, debris, or buried storage containers are encountered during construction, the contractor(s) will have available, a qualified environmental consulting firm to perform sampling and analysis of potentially hazardous substances and coordinate with the appropriate regulatory agencies, if necessary. The required handling, storage and disposal methods shall depend on the types and	Less than Significant

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
	<p>concentrations of chemicals identified in the soil. Any site investigations or remediation shall comply with applicable laws.</p> <p>HA-3: If underground storage tanks (USTs) are discovered during construction, the UST, associated piping, and impacted soil shall be removed by a licensed and experienced UST removal contractor. The UST and contaminated soil shall be removed in compliance with applicable county and state requirements.</p> <p>HA-4: Groundwater generated by dewatering shall be disposed of or discharged in accordance with relevant rules and regulations. Discharge of groundwater to the sewer system or off-site disposal shall comply with applicable county and state discharge regulations.</p>	
<p>Well Contamination:</p> <p>The proposed project would have a less than significant impact on well contamination with mitigation.</p>	<p>HA-5: Prior to the commencement of excavations, DWR shall conduct a comprehensive well survey to locate, identify, and confirm all existing groundwater wells within the construction zone. Information for well locations shall be obtained, if available, from DWR, San Bernardino County Environmental Health Services, RWQCB, and the former property owners. Groundwater wells, including monitoring wells, shall be properly destroyed and removed in accordance with DWR Well Standards. Replacement wells shall be constructed by DWR if requested by owners of wells destroyed by the project.</p>	Less than Significant
<p>Hazardous Materials Used During Construction:</p> <p>Materials used during the construction of the project will have a less-than-significant impact on the surrounding environment with mitigation.</p>	<p>HA-6: Consistent with Storm Water Pollution Prevention Plan (SWPPP) requirements identified in the Hydrology and Water Quality section of this document, DWR shall require the contractor to implement best management practices (BMPs) for handling hazardous materials on the construction site. BMPs will include the following:</p> <ul style="list-style-type: none"> • Follow manufacturers' recommendations and regulatory requirements for use, storage, and disposal of chemical products and hazardous materials used in construction; • During routine maintenance of construction equipment, properly contain and remove grease and oils; • Properly dispose of discarded containers of fuels and other chemicals; and • Provide secondary containment at designated fueling locations. 	Less than Significant
<p>Use of Hazardous Materials During Operation of Facilities:</p> <p>The proposed project would have a less-than-significant impact on the surrounding environment during operation of the facilities with mitigation.</p>	<p>HA-7: For facilities within 1,500 feet of the Santa Ana River channel and within the Woollystar Preservation Area, weed abatement will be conducted manually. No herbicides will be used in these areas.</p> <p>HA-8: DWR will ensure that herbicides are stored and applied according to manufacture specifications and in compliance with DWR's Division of Operations and Maintenance standard practices.</p>	Less than Significant
<p>Hazardous Material Sites:</p> <p>The proposed project would be located near a hazardous material site.</p>	Implement HA-1, HA-2, HA-3, and HA-4.	Less than Significant

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
Hazardous Material Use Near Schools: Portions of the proposed pipeline and reservoir would be located within a quarter mile of a high school.	Implement HA-8.	Less than Significant
Grassland and Wildland Fires: The proposed project would have a less-than-significant impact related to grassland or wildland fire hazards with mitigation.	HA-9: During construction, all staging areas, welding areas, or areas slated for development using spark-producing equipment will be cleared of dried vegetation or other material that could ignite. Any construction equipment that includes a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the proposed project, DWR shall require all vehicles and crews working at the project site to have access to functional fire extinguishers at all times. In addition, construction crews are required to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks.	Less than Significant
Airport Hazards: The proposed project would have less-than-significant impacts related to Airport safety hazards.	Implement LU-7	Less than Significant
Emergency Response Plans: The proposed project would not conflict with the implementation of an emergency response plan or interfere with an evacuation route.	Implement TR-3	Less than Significant
Hydrology and Water Quality		
Water Quality: The proposed project would have less-than-significant impact on local water quality with implementation of mitigation measures.	HYDRO-1: The required SWPPP shall at the least, include BMPs that facilitate site control, housekeeping, and site restoration components. The BMP's should be similar to those described in the California Storm Water Quality Association Storm Water Best Management Practice Handbook. At a minimum the following BMPs should be implemented: <ul style="list-style-type: none"> • Stockpiled soils shall be controlled to prevent erosion from wind and runoff. Control measures may include covering, silt fences, straw bales, or construction of earthen swales. • Vehicle and equipment fueling, equipment and fuel storage, and concrete wash activities shall be performed in controlled areas a minimum of 1,000 feet from surface water features with secondary containment and spill prevention equipment. • Street sweeping shall be conducted on surface streets affected by construction and at construction site entrances and exits including during periods of soil hauling as necessary to prevent tracking soil onto streets. 	Less than Significant

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
	<ul style="list-style-type: none"> No vehicle or equipment wash water, including concrete wash water, will be allowed to run off the site. Controls will be implemented to detain wash water and remove waste from the site for appropriate disposal. No equipment shall be re-fueled within 1,000 feet of the main channel of the Santa Ana River. <p>HYDRO-2: DWR shall adopt the following measures for surface water diversion:</p> <ul style="list-style-type: none"> Construction within the Santa Ana River channel requiring diversion of Santa Ana River water will occur in the non-rainy months (May-September). DWR shall coordinate with the USACE regarding releases from Seven Oaks Dam to minimize flow during the stream crossing construction. The active streambed shall be returned to its pre-construction width and elevation after the construction activities are complete. The diversion outfall location shall have velocity reduction features and armoring if necessary to prevent increased turbidity, scouring and erosion. These features should be designed similar to BMPs EC-10 and NS-5 described in California Stormwater Quality Association Stormwater Best Management Practice Handbook (January 2003). Sediment basins shall be used if necessary to minimize turbidity during diversions. <p>HYDRO-3: DWR shall require the excavation contractor to prepare a dewatering and diversion management plan outlining the dewatering system design, diversion system design, operation schedule, permit conditions of approval, and monitoring requirements. DWR shall review and approve the plan prior to its implementation.</p>	
<p>Drainage and Flooding: The proposed project would have a less-than-significant impact on flooding and the flood plain with implementation of mitigation measures.</p>	<p>HYDRO-4: DWR shall design the Santa Ana River crossing to prevent eventual exposure by riverbed scouring. The pipeline shall be placed approximately 20 feet below possible scour depths and shall be encased in concrete under the active channel.</p> <p>HYDRO 5: DWR shall request notification by USACE or SBCFCD of future riverbed modifications in the segment of the Santa Ana River from the East Branch Extension crossing to Plunge Creek. Riverbed modifications of concern include the removal and replacement of slope protection structures and riverbed armoring layers.</p>	Less than Significant
<p>Levee Failure: The proposed project would have a less-than-significant impact from potential levee failure.</p>	None required.	Less than Significant
<p>Groundwater Depletion: The proposed project would have less-than-significant impact on groundwater resources.</p>	None required.	Less than Significant
<p>Seiche, Tsunami, Mudflow: The proposed project would have a</p>	None required.	Less than Significant

TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Mitigation Measures	Significance after Mitigation
less-than-significant impact from Seiche, Tsunami, or Mudflow threats		
Land Use		
Divide an Established Community: Project implementation would not divide an established community.	None required.	No Impact
Consistency with Land Use Plans: The proposed project would be consistent with local land use plans, policies, regulations, and zoning ordinances with implementation of mitigation measures.	LU-1: The permanent easement through the WSPA will not allow vehicle traffic. No permanent roads will be constructed through the WSPA. LU-2: Flood control facilities, water conservation facilities including percolation ponds, roadways and private yards and driveways, will be returned to their original condition following installation of the pipeline.	Less than Significant
Effects to Agricultural Areas and Farmland: The proposed project would have a less-than-significant impact on the conversion of farmland.	None required.	Less than Significant
Effects to Recreational Facilities: The proposed project would have a less-than-significant impact on recreational facilities.	None required.	No Impact
Effects on Airport Operations: The proposed project would have a less-than-significant impact on airport operations with implementation of mitigation measures.	LU-3: : DWR shall either move the alternative alignment eastward of the planned runway extension, or include an encasement structure in the design of the project within the path of the proposed runway that would allow for a runway to be constructed over the pipeline in the future. The encasement structure would also provide necessary maintenance access. LU-4: Prior to final design, DWR will submit its proposed project plans to the Airport Land Use Commission for review and comment. LU-5: Prior to conducting construction activities within the Airport Influence Area, DWR shall prepare an airport construction safety plan that identifies best management practices for use within each Zone identified in the Airport Land Use Compatibility Plan. For proposed construction within the Runway Protection Zone (Zone A), the Plan shall include, at a minimum, construction timeframes and hours, lighting and flagging requirements, air traffic control communication requirements, access and egress restrictions, equipment staging area requirements, personal safety equipment requirements for construction workers, and appropriate notification to aviators. The plan will be approved by the City of Redlands. LU-6: Prior to final design, DWR shall identify the ground elevation associated with each project component and submit its project plans to airport staff for review and comment. DWR shall submit its design plans for airspace	Less than Significant

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
<p>Effects on Aviation and Wildlife Hazards:</p> <p>The proposed project would have a less than significant impact on the Airport Land Use Compatibility Plan including wildlife management plans with implementation of mitigation measures.</p>	<p>analysis (FAA Part 7460-I review) to determine whether any of the proposed project components will protrude into protected airspace. If such objects are identified, DWR, airport staff, and FAA will identify appropriate steps to adjust project plans or include appropriate markings to identify hazards to aviators pursuant to FAA Part 7460-I.</p> <p>LU-7: DWR shall reduce the potential attraction of its proposed facilities to wildlife through project design features, and ongoing monitoring as described below:</p> <ul style="list-style-type: none"> DWR shall incorporate wildlife deterrent design measures to minimize attracting wildlife. Measures could include installation of a wire grid over the proposed reservoir as well as other mechanical means of deterring avian wildlife. DWR shall coordinate with the City of Redlands to develop a Wildlife Hazard Management Plan for the Citrus Reservoir pursuant to FAA guidelines. At a minimum the Plan would include maintenance, monitoring, and reporting requirements. 	Less than Significant
<p>Effects on Population and Housing:</p> <p>The proposed project would have a less-than-significant impact on population and housing.</p>	None required.	No Impact
Noise and Vibration		
<p>Noise Standards:</p> <p>Daytime construction would exceed noise standards.</p>	<p>N-1: DWR shall ensure that the construction contractor avoids noise sensitive hours as follows:</p> <ul style="list-style-type: none"> Construction activities within unincorporated San Bernardino County shall be limited to between 7:00 a.m. and 7:00 p.m., Monday through Saturday, and not permitted Sundays and federal holidays. Construction activities within the City of Highland and City of Redlands shall be limited to between 7:00 a.m. and 6:00 p.m., Monday through Saturday, and not permitted Sundays and federal holidays except in the pipeline construction corridor adjacent to the Redlands Municipal Airport and within the active Santa Ana River channel. <p>N-2: DWR shall require construction contractors to minimize nuisance construction noise by implementing the following measures:</p> <ul style="list-style-type: none"> Signs shall be posted at the construction sites that include permitted construction days and hours and a day and evening contact name and number for the job site. An onsite complaint and enforcement manager shall respond to and track complaints and questions related to noise. <p>N-3: DWR shall require construction contractors to minimize construction noise by implementing the following measures:</p> <ul style="list-style-type: none"> During construction, the contractor shall outfit all equipment, fixed or mobile, with properly operating and maintained exhaust and intake mufflers, consistent with manufacturers' standards. Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air 	Significant and Unavoidable

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
	<p>exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used. External jackets on the tools themselves shall be used where feasible. Quieter procedures, such as use of drills rather than impact tools, shall be used whenever feasible.</p> <ul style="list-style-type: none"> Stationary noise sources that could affect adjacent receptors shall be located as far from adjacent receptors as possible. 	
Temporary Noise Increase Construction activities would result in periodic increases in the ambient noise level.	Implement N-1, N-2, and N-3.	Significant and Unavoidable
Vibration: Impacts would be less than significant with the implementation of mitigation measures.	N-4: DWR shall conduct a survey of buildings and infrastructure located within 50 feet of construction zones that will experience vibratory pile driving. The survey shall include photographs of foundations, walls, and hardscape areas to document their condition prior to construction. DWR shall return following the completion of the vibratory sheet-piling activities to inspect the condition of the structures. If damage is evident that is the result of vibration from construction activities, DWR shall provide appropriate compensation to remediate the damage.	Less than Significant
Permanent Noise Increase: The proposed project would not result in a significant permanent increase in ambient noise.	None required.	Less than Significant
Airport Noise: The proposed project would not introduce sensitive receptors to airport noise.	None required.	Less than Significant
Public Services and Utilities		
Local Services and Utility Systems: The proposed project would result in less-than-significant impacts to local services and utilities with implementation of mitigation measures.	<p>PU-1: Prior to excavation, DWR shall locate overhead and underground utility lines, such as natural gas, electricity, sewage, telephone, fuel, and water lines, that may reasonably be expected to be encountered during excavation work.</p> <p>PU-2: DWR shall confirm the specific location of all high priority utilities (i.e. pipelines carrying petroleum products, oxygen, chlorine, toxic or flammable gases; natural gas in pipelines greater than 6 inches in diameter, or with normal operating measures, greater than 60 pounds per square inch gauge; and underground electric supply lines, conductors, or cables that have a potential to ground more than 300 volts that do not have effectively grounded sheaths) and such locations will be highlighted on all constructions drawings. In the contract specifications, DWR will require that the contractor provide weekly updates on planned excavation for the upcoming week when construction will occur near a high priority utility.</p> <p>PU-3: DWR shall notify local fire departments any time damage to a gas utility results in a leak or suspected leak, or whenever damage to any utility results in a threat to public safety.</p>	Less than Significant

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
	<p>PU-4: DWR shall contact utility owner if any damage occurs as a result of the project.</p> <p>PU-5: DWR shall coordinate final construction plans and specifications with affected utilities.</p> <p>PU-6: DWR shall provide a copy of the Traffic Control Plan to the County sheriff's department, local police departments, County fire department, and local fire departments for their review prior to construction. DWR shall provide 72-hour notice to the local service providers prior to construction of pipeline activities.</p>	
<p>Solid Waste: The proposed project would result in a less-than-significant impacts on local landfills with implementation of mitigation measures.</p>	<p>PU-7: DWR shall encourage project facility design and construction methods that produce less waste.</p> <p>PU-8: DWR shall include in its construction specifications a requirement for the contractor to describe plans for recovering, reusing, and recycling wastes produced through construction, demolition, and excavation activities.</p>	Less than Significant
<p>Water and Wastewater: The proposed project would result in less-than-significant impacts to water supplies and wastewater treatment capacity.</p>	None required.	Less than Significant
<p>Energy Demand: The proposed project would result in less-than-significant increase in energy usage.</p>	None required.	Less than Significant
Traffic and Circulation		
<p>Construction Traffic: Construction activities for the proposed project would have a less-than-significant impact on roadway traffic with mitigation.</p>	<p>TR-1: DWR shall provide staging areas for excavated material generated during pipeline installation within the construction zone or at locations accessible by construction roads to minimize use of local roadways for hauling of excavated materials.</p> <p>TR-2: DWR shall obtain the necessary road encroachment permits prior to construction and would comply with the applicable conditions of approval. Road encroachment permits may be necessary for construction within the following roadways: Crafton Avenue, Madeira Avenue, Garnet Street, Cone Camp Road, and Opal Avenue.</p> <p>TR-3: DWR shall require the contractor to prepare a Traffic Control Plan in accordance with professional engineering standards prior to construction within roadways. The Traffic Control Plan could include the following requirements:</p> <ul style="list-style-type: none"> • DWR shall maintain access for local land uses including residential driveways, commercial properties, and agricultural lands during construction activities. • Emergency services access to local land uses would be maintained at all times for the duration of construction activities. Local emergency service providers would be informed of road closures and detours. 	Less than Significant

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
	<ul style="list-style-type: none"> DWR shall post advanced warning of construction activities to allow motorists to select alternative routes in advance. DWR shall arrange for a telephone resource to address public questions and complaints during project construction. DWR shall establish methods for accommodating the construction-generated parking demand. For roadways requiring full closures, DWR (and the construction contractor) shall develop circulation and detour plans to minimize impacts to local street circulation. This would include the use of signing to guide vehicles onto alternative roads around the construction zone. DWR shall ensure that the contractor does not allow trucks hauling excavated material to leave the project site at an interval faster than one truck every two minutes. This required spacing will reduce the anticipated less-than-significant project-generated roadway and intersection congestion. <p>TR-4: DWR shall require the contractor to prepare a Haul Route Plan that will include roadway safety measures, roadway maintenance, and signage requirements along roads used as haul routes. The safety measures shall include, but not be limited to, crossing guard funding for schools and recreational parks along the haul route. If the haul route using San Bernardino Avenue to Orange Street were selected, the safety measures shall include prohibition of on-street parking on the northeast corner of the San Bernardino Avenue / Orange Street intersection (to facilitate right turns by haul trucks from westbound San Bernardino Avenue to northbound Orange Street). The Plan shall be submitted to the County of San Bernardino, the City of Highland, and the City of Redlands (and the City of Highlands, as appropriate) for review.</p>	
<p>Effects to Road Accessibility: Construction of the proposed new pipeline would have a less-than-significant impact on restricting access to public roads.</p>	Implement TR-2 and TR-3.	Less than Significant
<p>Effects on Parking: Construction activities for the proposed project would have a less-than-significant impact on the demand for parking.</p>	Implement TR-3.	Less than Significant
<p>Effects to Public Roadway Safety: Construction activities would have a less-than-significant impact traffic safety hazards for vehicles, bicyclists and pedestrians on public roadways.</p>	Implement TR-2 and TR-3.	Less than Significant

**TABLE ES-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Environmental Impact	Mitigation Measures	Significance after Mitigation
Effects to Roadways: Construction activities would have a less-than-significant impact on haul routes and roads used by construction vehicles to access the project work sites with mitigation.	TR-5: DWR shall monitor and maintain roadway surfaces along haul routes for the duration of the hauling period and return roadways impacted by construction to a structural condition equal to that which existed prior to construction activity.	Less than Significant
Air Traffic Patterns: Construction and Operation of the proposed project would have a less-than-significant impact on air traffic patterns.	None required.	No Impact
Alternative Transportation: Construction and operation of the proposed project would have less-than-significant impacts on alternative modes of transportation.	None required.	Less than Significant
Cumulative Impacts		
Cumulative Effects: The proposed project would have a significant and unavoidable cumulative impact on air quality, agriculture, and noise.	C-1: DWR shall contact the City of Redlands and San Bernardino County to determine if construction of the Redlands Municipal Airport, Garnet Street Bridge, or Opal Avenue Rehabilitation projects would occur at the same time and if the same routes had been identified as haul routes for other construction-related traffic. If construction of any of these projects would occur along the same haul routes identified by DWR at the same time, DWR shall coordinate with the City of Redlands and San Bernardino County to identify alternative haul routes that would minimize the cumulative effect to traffic.	Significant and Unavoidable
Growth Inducement and Secondary Effects of Growth		
Growth Inducing Impacts: The proposed project would deliver potable water supply that would indirectly accommodate growth, and contribute to the secondary effects of growth in the region.	None available.	Significant and Unavoidable

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CHAPTER 1

Introduction and Project Background

1.1 Purpose of the EIR

The California Department of Water Resources (DWR) has prepared this Draft Environmental Impact Report (Draft EIR) to provide the public and responsible and trustee agencies information about the potential effects on the local and regional environment associated with construction and operation of the East Branch Extension – Phase II Project (proposed project). This Draft EIR has been prepared pursuant to the California Environmental Quality Act (CEQA) of 1970 (as amended), codified at California Public Resources Code Sections 21000 et. seq., and the State *CEQA Guidelines* in the Code of Regulations, Title 14, Division 6, Chapter 3.

This Draft EIR describes the environmental impacts of the proposed project and suggests mitigation measures to reduce impacts to a less-than-significant level. The impact analyses are based on a variety of sources, including agency consultation, technical studies, and field surveys. As Lead Agency, DWR may use this EIR to approve the proposed project.

1.2 CEQA EIR Process

1.2.1 Notice of Preparation

In accordance with Sections 15063 and 15082 of *CEQA Guidelines*, DWR, as Lead Agency, prepared a Notice of Preparation (NOP) of an EIR (see **Appendix A**) for the East Branch Extension Phase II. The NOP was circulated to local, state, and federal agencies and to other potentially interested parties on April 4, 2007. The comment period extended through May 5, 2007. An advertisement was placed in the Press Enterprise announcing the availability of the NOP. The NOP provided a general description of the proposed action, a description of sites for proposed facilities and upgrades, construction methods, and a preliminary list of potential environmental impacts.

DWR held a public scoping meeting on April 18, 2007 at the San Bernardino Valley Municipal Water District (SBVMWD) office. Public notices were placed in local newspapers informing the general public of the scoping meeting. The purpose of the meeting was to present the proposed project to the public through use of display maps, route alignments and handouts describing project components and potential environmental impacts. DWR staff, local water agency staff, and members of the public attended the scoping meeting. Attendees were provided an opportunity

to voice comments or concerns regarding potential effects of the proposed project. Appendix A includes each comment letter received during the scoping period.

1.2.2 Draft EIR

This Draft EIR provides a description of the proposed project, environmental setting, project impacts, and mitigation measures for impacts found to be significant, as well as an analysis of project alternatives. Significance criteria have been developed for each environmental resource analyzed in this Draft EIR, and are defined for each impact analysis section. Impacts are categorized as follows:

- Significant and unavoidable;
- Potentially significant, but can be mitigated to a less-than-significant level;
- Less than significant (mitigation is not required under CEQA, but may be recommended); or
- No impact.

CEQA requires that EIRs evaluate ways of avoiding or minimizing identified environmental effects where feasible through mitigation or project alternatives. Mitigation measures identified in the EIR are commitments that become part of the approved project.

1.2.3 Public Review

This document is being circulated to local, state and federal agencies, and to interested organizations and individuals who may wish to review and comment on the Draft EIR. Publication of this Draft EIR marks the beginning of a 45-day public review period, during which written comments may be directed to the address below. During the 45-day review period, DWR will hold a public meeting where the public will have the opportunity to provide oral comments on the Draft EIR. The meeting will be held on Thursday, August 14, 2008 at 6 PM at the following address:

Yucaipa Community Center
34900 Oak Glen Road
Yucaipa, CA 92399
(909) 290-7460

Comments on the Draft EIR should be mailed or e-mailed by September 15, 2008 to:

Tom Barnes
on behalf of the California Department of Water Resources
RE: East Branch Extension Phase II
707 Wilshire Boulevard, Ste. 1450
Los Angeles, CA 90017
tbarnes@esassoc.com
213-599-4300-phone
213-599-4301-fax

1.2.4 Final EIR

Written and oral comments received in response to the Draft EIR will be addressed in a Response to Comments document which, together with the Draft EIR, will constitute the Final EIR. DWR will then consider EIR certification (*CEQA Guidelines* §15090). Once the EIR has been certified, DWR may consider project approval. Prior to approving the project, DWR must make written findings with respect to each unmitigated significant environmental effect identified in the EIR in accordance with Section 15091 of *CEQA Guidelines*.

1.2.5 Mitigation Monitoring and Reporting Plan

CEQA requires lead agencies to “adopt a reporting and mitigation monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment” (CEQA §21081.6, *CEQA Guidelines* §15097). The Mitigation Monitoring and Reporting Plan (MMRP) is included with this Draft EIR.

1.3 Organization of the Draft EIR

This Draft EIR has been organized into the following sections:

- ES. Executive Summary.** This chapter summarizes the contents of the Draft EIR.
- 1. Introduction and Project Background.** This section discusses the CEQA process and the purpose of the EIR.
- 2. Project Description.** This section provides an overview of the proposed project, describes the need for and objectives of the proposed project, and provides detail on the characteristics of the proposed project.
- 3. Environmental Setting, Impacts and Mitigation Measures.** This chapter describes the environmental setting and identifies impacts of the proposed project for each of the following environmental resource areas: Aesthetics; Air Quality; Biological Resources; Cultural Resources; Geology, Soils, Seismicity, and Mineral Resources; Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use, Planning and Recreation; Noise and Vibration; Public Services and Utilities; and Transportation and Traffic. Measures to mitigate the impacts of the proposed project are presented for each resource area, if necessary.
- 4. Cumulative Impacts.** This chapter describes the potential impacts of the proposed project when considered together with other related projects in the project area.
- 5. Growth Inducement and Secondary Effects of Growth.** This chapter describes the potential for the proposed project to induce growth.
- 6. Alternatives Analysis.** This chapter presents an overview of the alternatives development process and describes the alternatives to the proposed project that were considered.

7. **Mitigation Monitoring and Reporting Program.** This chapter identifies the significant and potentially significant impacts of the proposed project, measures adopted by DWR to reduce these impacts to less-than-significant levels, and reporting tasks for implementation of measures.
8. **Report Preparers.** This chapter identifies authors and consultants involved in preparing this Draft EIR, including persons and organizations consulted.
9. **Acronyms.**
10. **References.**
11. **Glossary.**

1.4 Responsible and Trustee Agencies

The analyses contained within this EIR will be used to support the acquisition of the following regulatory permits or approvals if needed:

- United States Army Corps of Engineers: 404 Clean Water Act – Individual Permit;
- United States Fish and Wildlife Service: Endangered Species Act – Section 7 Consultation, incidental take permit;
- California Department of Fish and Game: 1602 Streambed Alteration Agreement, California Endangered Species Act;
- California Department of Fish and Game: 2081/80 incidental take permit;
- Regional Water Quality Control Board: 401 Water Quality Certification;
- Regional Water Quality Control Board: Storm Water Pollution Prevention Plan;
- San Bernardino Valley Water Conservation District: Easement;
- San Bernardino County Flood Control District: Easement;
- County of San Bernardino: Roadway Encroachment Permit;
- Woollystar Preservation Area Oversight Committee: Easement;
- City of Redlands: Easement;
- Redlands Municipal Airport, Airport Land Use Commission Approval;
- Metropolitan Water District of Southern California; Consent to common use agreement, and
- City of Highland: Roadway Encroachment Permit.

1.5 Project Background

1.5.1 State Water Project

The State Water Project (SWP) began in 1960 with California voter approval for a statewide distribution system to meet growing water needs. The SWP is the nation's largest state-built water conveyance system, which includes reservoirs, lakes, and storage tanks; canals, tunnels and pipelines; and pumping and power plants. The system conveys water to 29 State Water Contractors (contractors), including SBVMWD and SGPWA. The contractors then deliver water directly to agricultural and urban water users or to water wholesalers and retailers. For the contractors, the SWP serves as an additional source of water within their service areas that is supplemental to their local sources.

1.5.1.1 Facilities

A significant portion of the SWP's water supply is obtained from Lake Oroville, located on the Feather River in Plumas County, which has a storage capacity of approximately 3.5 million acre feet (af). The lake stores winter runoff and spring snowmelt from the Feather River watershed. Releases from Lake Oroville flow down the Feather River then merge with the Sacramento River. The Sacramento River flows into the Sacramento-San Joaquin Delta which is comprised of 738,000 acres of land interlaced with channels that receive runoff from approximately 40 percent of the state's land area. Water from the northern Delta is diverted to the North Bay Aqueduct by the Barker Slough Pumping Plant to serve the counties of Napa and Solano. The SWP diverts water in the southern Delta to the Clifton Court Forebay for delivery south of the Delta. From the Clifton Court Forebay, water flows to the Skinner Fish Facility, which diverts fish away from the Delta pumps. The Harvey O. Banks Delta Pumping Plant then lifts water into the California Aqueduct, which then flows to the Bethany Reservoir. From Bethany Reservoir, the South Bay Pumping Plant pumps water into the South Bay Aqueduct to serve portions of Alameda and Santa Clara counties. The remaining water in Bethany Reservoir continues on to the California Aqueduct.

The 444 mile-long California Aqueduct winds along the west side of the San Joaquin Valley and transports water to agricultural lands in the Valley and the urban regions of Southern California. As water traverses the San Joaquin Valley, it is delivered to farmlands and to the Coastal Branch Aqueduct. The remainder is pumped to the foot of the Tehachapi Mountains where pumps lift the water 1,926 feet up and over the Tehachapi Mountains. As water reaches the southern base of the Tehachapis, the aqueduct splits into two branches (the East Branch and West Branch). The West Branch carries water to Pyramid Lake in Los Angeles County and from there to Castaic Lake, the western terminus of the SWP.

The East Branch continues through the Tehachapi East Afterbay, Alamo Powerplant, Pearblossom Pumping Plant, and Mojave Siphon Powerplant and discharges into Lake Silverwood near the Cajon Pass. The water is conveyed through a tunnel under the San Bernardino Mountains. The 28-mile-long Santa Ana Pipeline then takes it underground to Lake

Perris, the southernmost termination of the SWP. The East Branch Extension delivers water from the Devil Canyon Power Plant Afterbay to the eastern part of San Bernardino Valley, Yucaipa Valley and the San Gorgonio Pass area in San Bernardino and Riverside counties. **Figure 1-1** depicts the SWP facilities in the southern portion of the state.

1.5.1.2 Operation of Storage and Conveyance Facilities

Most of the SWP water is obtained from Lake Oroville, north of the Delta, while about 97 percent of the demand for SWP water is located south of the Delta. DWR's ability to convey water from Lake Oroville to contractors south of the Delta is constrained by the physical characteristics of the Delta, environmental regulations, and operational and storage constraints.

Water that is diverted to the Clifton Court Forebay from the Delta is restricted to 6,680 cfs as a three-day average inflow. The Forebay is used as a holding reservoir to allow for pumping flexibility at the Banks Pumping Plant. Pumping flexibility minimizes the impact to power loads on the California electrical grid.

San Luis Reservoir is the primary storage facility south of the Delta. It is used to store water pumped by the Banks Pumping Plant that exceeds contractors' current demands. This generally occurs during winter and spring. DWR attempts to fill the San Luis Reservoir as early as it can in the winter and it is typically full by February, March, or April. Once the Reservoir and other SWP storage facilities are full, DWR can announce the availability of additional water, on a temporary basis, under Article 21 of the supply contracts.

During the summer and fall, water is released from San Luis Reservoir to the California Aqueduct when pumping at the Banks Pumping Plant is insufficient to meet contractors' peak demands. The San Luis Reservoir usually reaches its low point in late August or early September. From September to mid-October contractors' demands normally drop and DWR may begin refilling the reservoir again. A second seasonal decrease in the reservoir may occur before fall and winter storms increase runoff in the Delta.

1.5.1.3 Allocations and Reliability

The amount of water available to the SWP fluctuates widely each year due to factors such as hydrologic conditions, flood management needs, the capacity of SWP storage and conveyance facilities, changing weather-temperature conditions, water quality, and environmental requirements. Water deliveries are based on the long-term water supply contracts that DWR has with each of the 29 contractors. The contractors are divided between agricultural and municipal and industrial (M&I) water supply agencies. The contracts outline how the contractors will repay all SWP capital and operating costs in exchange for the state's financing, constructing and operating the SWP. The contracts also cover issues such as how water is allocated in the event of either a surplus or shortage of supplies and DWR's obligation to take all reasonable effort to complete needed SWP facilities. The contracts were modified in 1994 under the Monterey Agreement, a set of 14 principles having the ultimate goals of increasing reliability of existing water supplies,



SOURCE: DWR, 2007.

DWR - East Branch Extension . 206008.01

Figure 1-1
State Water Project Overview

providing stronger financial management, and increasing water management flexibility. The Monterey Agreement was agreed upon by DWR and SWP contractor representatives.

Article 6 of the contracts defines Table A amounts as the amount of water a contractor has contracted for with DWR for each year the contract is in effect. Table A amounts are used in allocating among contractors the total SWP water supply that is determined to be available for delivery each year. Table A amounts also indicate the maximum amount of dependable SWP water DWR agrees to deliver to a contractor during a year. Each year, each contractor may request an amount not to exceed its Table A amount. Under the Monterey Agreement, the sum of the maximum Table A amounts of all contractors is not to exceed 4.185 million af. The East Branch Extension Phase II conforms with the SBVMWD and SGPWA long-term water supply contracts and the Monterey Agreement. The Monterey Agreement recognizes SGPWA's and SBVMWD's full Table A amounts.

Articles 18 and 21 specify how DWR should allocate water to contractors during a temporary shortage or surplus of water supply. Shortages and surpluses are required to be shared among all contractors in proportion to their Table A amounts. Article 21 allows for surplus water deliveries only after all Table A deliveries have been fully met. Article 56(d) of the Monterey Agreement established a turnback pool for annual transfers of Table A among contractors. The turnback pool provides a mechanism for contractors that do not need all of their Table A to turn that water back for sale to another contractor or DWR early enough in the year for it to be put to use. Completion of the East Branch Extension – Phase II will allow SGPWA to receive its maximum Table A amount and may have some affect on SBVMWD's and SGPWA's participation in the turnback pool.

The total Table A water supply for each year is estimated based on a variety of factors including storage reservoir levels, surface water flow levels, Delta conditions, and contractor delivery requests. DWR determines an initial Table A allocation percentage, based on Table A amounts, the water supply, and contractor requests. The allocation percentage determines the percentage of Table A amounts that will be allocated to contractors for the year. The initial allocation of water is based on a conservative assumption of future precipitation and is typically increased over the course of the year as hydrological conditions become more defined. Table A allocations are not the same as Table A deliveries, as contractors may not take delivery of all the water allocated to them.

From 1980 to 1989, DWR was able to meet 100 percent of the contractors' requests for Table A water. Between 1990 and 1994, DWR had greater difficulty meeting demand as several dry years occurred. Contractors received less than 50 percent of their requests in 1991 and 1992. In recent years, the SWP has been able to deliver full Table A amounts only in wet years. SWP deliveries can be substantially less than full Table A amounts during dry years. This has been the result of a rise in contractors' demand levels, more stringent water quality requirements, and environmental constraints.

Recent developments regarding the Delta have introduced uncertainty into the SWP's ability to convey water to the contractors, which may in turn affect future Table A allocations. In 2004, the

Bureau of Reclamation and DWR developed a new Operating Criteria Plan (OCAP) for the SWP and the Central Valley Project (CVP). The OCAP included the project descriptions required for a comprehensive biological assessment of the effects of SWP and CVP operations on listed species. In 2004, USFWS issued a non-jeopardy biological opinion (BO) with regards to impacts to the Delta smelt caused by revised operations of the CVP and SWP. The BO concluded that adverse effects to the Delta smelt would be avoided or minimized by the conservation and adaptive management measures included in the OCAP. In May 2007, the Wagner decision made by the U.S. District Court found the OCAP BO for Delta smelt to be inconsistent with the Federal Endangered Species Act and required that it be rewritten. On December 14, 2007 the court established interim operating rules while the BO is being rewritten that include in-Delta flow limits in Old and Middle Rivers which have the effect of restricting SWP and CVP pumping (DWR, 2007d).

SWP reliability may also be affected by climate change as it may cause the timing and quantity of available water supplies to be less predictable in the coming decades. Reservoir flood control operations may require adjustment if more precipitation begins to occur as rain instead of snow. A shift from snow to rain would move the timing of the peak runoff toward the winter resulting in less spring and summer Delta inflows and an increase in Delta salinity. A rise in sea level could also increase Delta salinity. In order to maintain the current in-Delta water quality standards, upstream reservoirs would need to be utilized to provide more water in the Delta for controlling seasonal salinity changes. This may result in lower reservoir levels and reduced water supply reliability during dry periods (DWR, 2007d).

1.5.1.4 CALFED Bay-Delta Program

The CALFED Bay-Delta Program was formed in 1994 to address long-standing and unresolved conflicts over water use in the Delta. It is a collaborative program of 23 federal and state agencies and its goal is to restore the ecological health of the Delta while ensuring an adequate supply for Delta water users to the SWP and the CVP. At certain times of the year, diversion of water from the Delta by the SWP and the CVP could harm federally listed fish species. At such times, it may be necessary to cease or reduce pumping.

The Environmental Water Account (EWA) is a CALFED program designed to enable diversion of water by the SWP and CVP from the Delta to be reduced when listed species are at risk while preventing the uncompensated loss of water to SWP and CVP contractors. The EWA replaces any water lost to the contractors due to curtailment of pumping by purchase of supplies from willing sellers and by taking advantage of regulatory flexibility. Operation of the EWA does not change deliveries to SWP contractors, but it can affect operational activities. For example, less water may be moved through the Delta between December to June and more may be pumped from July to September.

DWR is also required to adhere to the State Water Resource Control Boards (SWRCB's) Water Rights Decision 1641 which requires the SWP to continue to meet certain water quality and flow objectives in the Delta.

1.5.2 Participating Water Contractors

The SGPWA is a wholesale water agency whose service area encompasses approximately 220 square miles in western Riverside County in the Beaumont Plains and San Geronio Pass geographic areas, between the cities of Yucaipa and Palm Springs, California. The SGPWA service area includes the cities of Banning, Beaumont, Calimesa, the community of Cherry Valley, the Morongo Indian Reservation and portions of the Cabazon area. The Agency is one of 29 State Water Contractors. The SGPWA has a maximum annual Table A amount of 17,300 acre-feet per year (afy) from the SWP. The specific amount of water that is allocated to the SGPWA each year varies with the amount of storage in SWP reservoirs, reservoir storage targets, hydrology, regulatory and environmental requirements, and the SWP contractors delivery requests. The East Branch Extension Phase I was completed in 2003, providing up to 8,650 afy of the SWP Table A water. Phase II would enable full delivery of SGPWA's SWP Table A amount plus additional water amounts that may be available under Article 21. The SGPWA water supplies include imported water from the SWP and groundwater from the Beaumont and Cabazon groundwater basins. SGPWA sells SWP water to local water retailers to reduce local groundwater overdraft.

The SBVMWD is a wholesale water agency whose service area encompasses approximately 325 square miles. It is located 60 miles east of Los Angeles and encompasses the eastern two-thirds of the San Bernardino Valley, the Crafton Hills and a portion of the Yucaipa Valley. It includes the cities and communities of Bloomington, Colton, Highland, Grand Terrace, Loma Linda, Mentone, Rialto, Redlands, Yucaipa and San Bernardino. The SBVMWD water resources include surface water from the Santa Ana River and its major tributaries, Mill Creek and Lytle Creek; groundwater from the Bunker Hill basin; and imported water from the SWP. The District's maximum annual SWP Table A amount is 102,600 afy. The East Branch Extension currently utilizes the District's Foothill Pipeline and the Greenspot Pipeline System to convey water to the SGPWA service area. **Figure 1-2** shows the location of the water district service areas.

1.5.3 East Branch Extension Phase I

1.5.3.1 SGPWA 1994 Water Importation Project EIR

SGPWA certified their Water Importation Project in 1994 to allow the SGPWA to receive its longstanding maximum annual Table A amount of 17,300 acre feet from the SWP for use in groundwater recharge and replenishment, and for extraction, treatment and ultimate potable water distribution to retail water purveyors throughout the SGPWA service area. The proposed facilities included pipelines, pump stations, spreading basins, wells and a regional water treatment plant. The Water Importation Project was developed to augment the replenishment of groundwater resources which had been declining since the 1920s in the Beaumont Storage Unit. The proposed project would replenished groundwater basins and supply water for existing residential and commercial uses. Based on approved and adopted population forecasts, the project would also supply water for regional growth anticipated by the local land use planning agency.



SOURCE: SBVMWD; SGPWD; ESA, 2007.

DWR - East Branch Extension . 206008.01

Figure 1-2
Water District Service Areas

In 1996, an addendum to the Water Importation Project EIR evaluated operation of the project primarily for groundwater recharge in order to correct the area's groundwater overdraft problem. It also evaluated current water production and use, the safe yield of the Beaumont Storage unit, all potential sources of water that could reasonably be available to the SGPWA, and potential growth-inducing impacts of the project.

1.5.3.2 DWR 1996 Feasibility of Extending the California Aqueduct

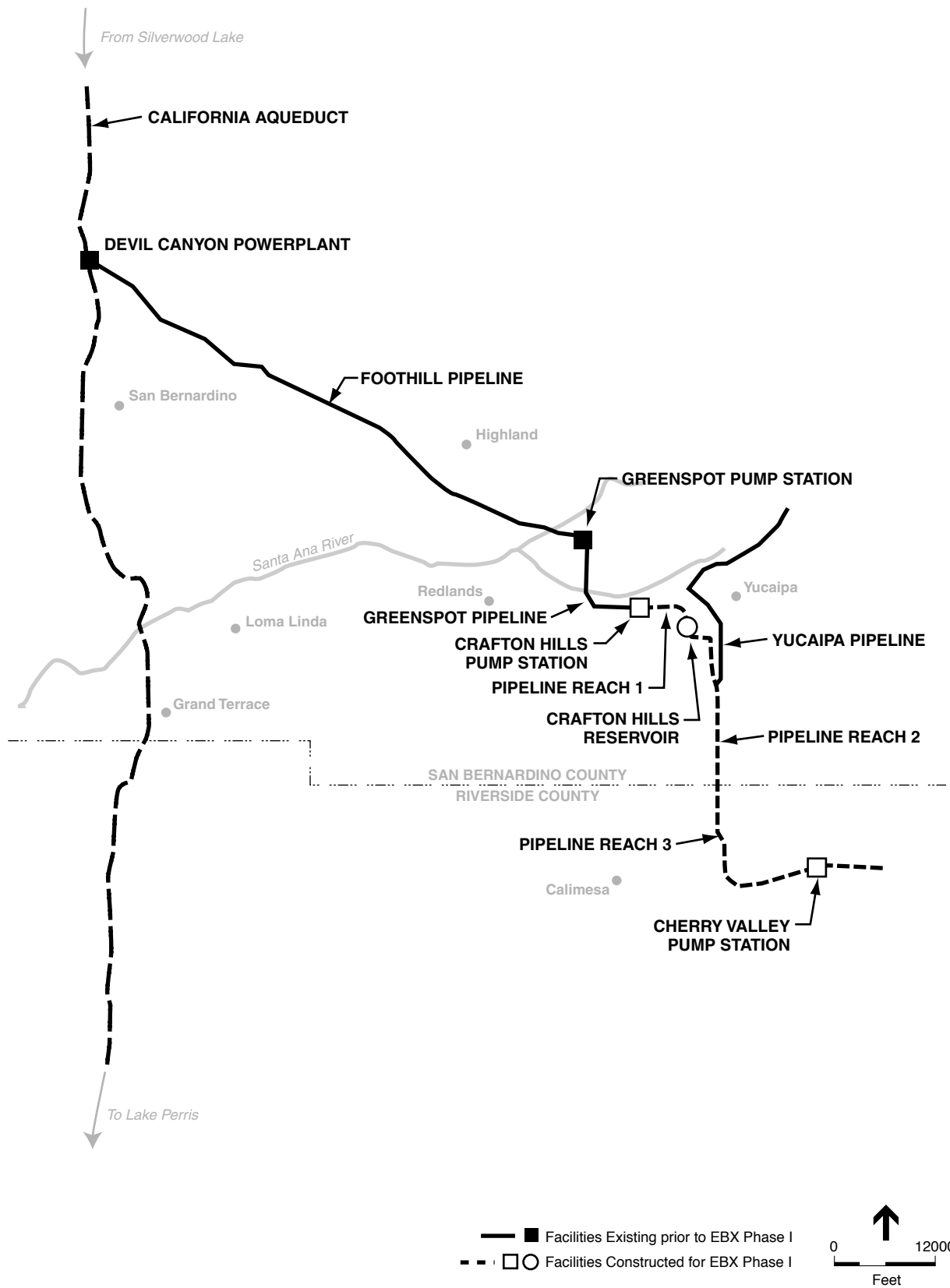
In 1995, the SGPWA asked DWR to consider implementation of the preferred alternative described in the Water Importation Project EIR as an Extension of the East Branch of the California Aqueduct. DWR subsequently prepared a feasibility study which determined that it had the authority to include the preferred alternative into the SWP. SBVMWD requested participation in the project. DWR certified the SGPWA Water Importation Project as the environmental clearance document for the East Branch Extension and filed a Notice of Determination in compliance with CEQA. DWR subsequently commenced preliminary engineering studies for facility design. In the course of design studies, a portion of the project alignment, as well as other project features were changed to better meet certain engineering objectives and avoid possible significant impacts to threatened and endangered species. Consequently, as lead agency for the project, DWR determined that a Supplemental EIR should be prepared to address changes in the design originally approved for the SGPWA Water Importation Project.

1.5.3.3 DWR 1997 East Branch Extension Phase I Supplemental EIR

Following the 1996 Feasibility Report, the project description for the East Branch Extension was modified and divided into two phases. Phase I would consist of the modification of the Greenspot Pump Station, Crafton Hills Pump Station, Cherry Valley Pump Station, Crafton Hills Reservoir, Pipeline Reach 1, Pipeline Reach 2, and Pipeline Reach 3. Phase II would include a new pipeline across the Santa Ana River that would provide more capacity than the existing Santa Ana River Crossing and Greenspot Pipelines. In 1997, a Supplemental EIR was prepared by DWR evaluating the East Branch Extension-Phase I Project. The Supplemental EIR included Phase II of the East Branch Extension as part of the overall project, but indicated that the specifics of construction would be evaluated in the future.

The Phase I Supplemental EIR was certified by DWR in March 26, 1998 and the Notice of Determination was filed March 27, 1998. Construction on the project began in February 9, 1999. Construction was completed and the system brought into service in 2003 providing water to SGPWA and SBVMWD.

The East Branch Extension Phase I extended water conveyance to the cities of Yucaipa, Calimesa, and the community of Cherry Valley. **Figure 1-3** identifies the improvements constructed for the East Branch Extension Phase I. The primary components of Phase I included upgrades to the Greenspot Pump Station and construction of the Crafton Hills Pump Station, Crafton Hills Reservoir, Bryant Pipeline, Singleton Pipeline, Cherry Valley Pump Station, and Noble Creek Pipeline. Completion of Phase I allowed supply of up to 8,650 acre-feet annually to



SOURCE: ESA, 2007

DWR - East Branch Extension . 206008.01

Figure 1-3
EBX-Phase I Components

the SGPWA service area. Upon completion of the Phase I facilities, the Crafton Hills Pump Station operated at a maximum capacity of 40 cubic feet per second (cfs). The Cherry Valley Pump Station was equipped with a 16 cfs pumping capacity. Subsequently, DWR has installed an additional 20 cfs spare pump at the Crafton Hills Pump Station and an additional 16 cfs spare pump in the Cherry Valley Pump Station. The installation of the spare pumps within the existing pump stations were covered in CEQA Categorical Exemptions adopted by DWR.

Phase II would increase the capacity of the system to deliver water from the Foothill Pipeline across the Santa Ana River to the conveyance infrastructure constructed in Phase I, increasing the system's capacity to accommodate SGPWA's full Table A amount of 17,300 afy. Both phases are collaborative efforts involving DWR, SGPWA, and SBVMWD.

1.6 Incorporation by Reference

As permitted Section 15150 of the *CEQA Guidelines*, this Draft EIR includes by reference technical studies, analyses, and reports from environmental assessments conducted for Phase I East Branch Extension Project. These include the *San Geronio Pass Water Agency Water Importation Project Environmental Impact Report* that was certified in 1994 and associated addenda; a 1996 study by the Department of Water Resources on the *Feasibility of Extending the California Aqueduct*; and the *Department of Water Resources Phase I East Branch Extension Project Supplemental Environmental Impact Report* and associated addenda.

1.7 Irreversible Changes

CEQA Guidelines Section 15126(c) requires a discussion of irreversible changes that are expected to occur from project implementation. The use of nonrenewable fossil fuels during the construction phase and project operation would result in an irreversible commitment and use of nonrenewable resources. The project would also result in the conversion of about 35 acres of existing citrus orchard to non-agricultural uses. Due to the large amounts of excavation proposed at this site, this agricultural conversion would be an irreversible change of the project.

1.8 Points of Public Concern

An NOP was issued on April 4, 2007 for the proposed East Branch Extension Phase II project. The complete NOP and comments received on the NOP are included in Appendix A. Comments received from the NOP scoping process included concerns regarding construction impacts, effects to the Santa Ana River floodplain, land use conflicts, airport compatibility, and cultural resource impacts.

CHAPTER 2

Project Description

2.1 Introduction

DWR proposes to implement Phase II of the East Branch Extension of the California Aqueduct (proposed project). The proposed project would construct a new pipeline, storage reservoir, and pump station in western San Bernardino County within the cities of Redlands, Highland, Yucaipa, and in the unincorporated community of Mentone (see **Figure 2-1**). A new pipeline would connect the SBVMWD's existing Foothill Pipeline to the existing Crafton Hills Pump Station. A new pump station and storage reservoir would enhance flexibility of the system. The proposed project would be designed with the capacity to deliver 17,300 afy of water to the SGPWA service area and additional water to portions of the SBVMWD service area.

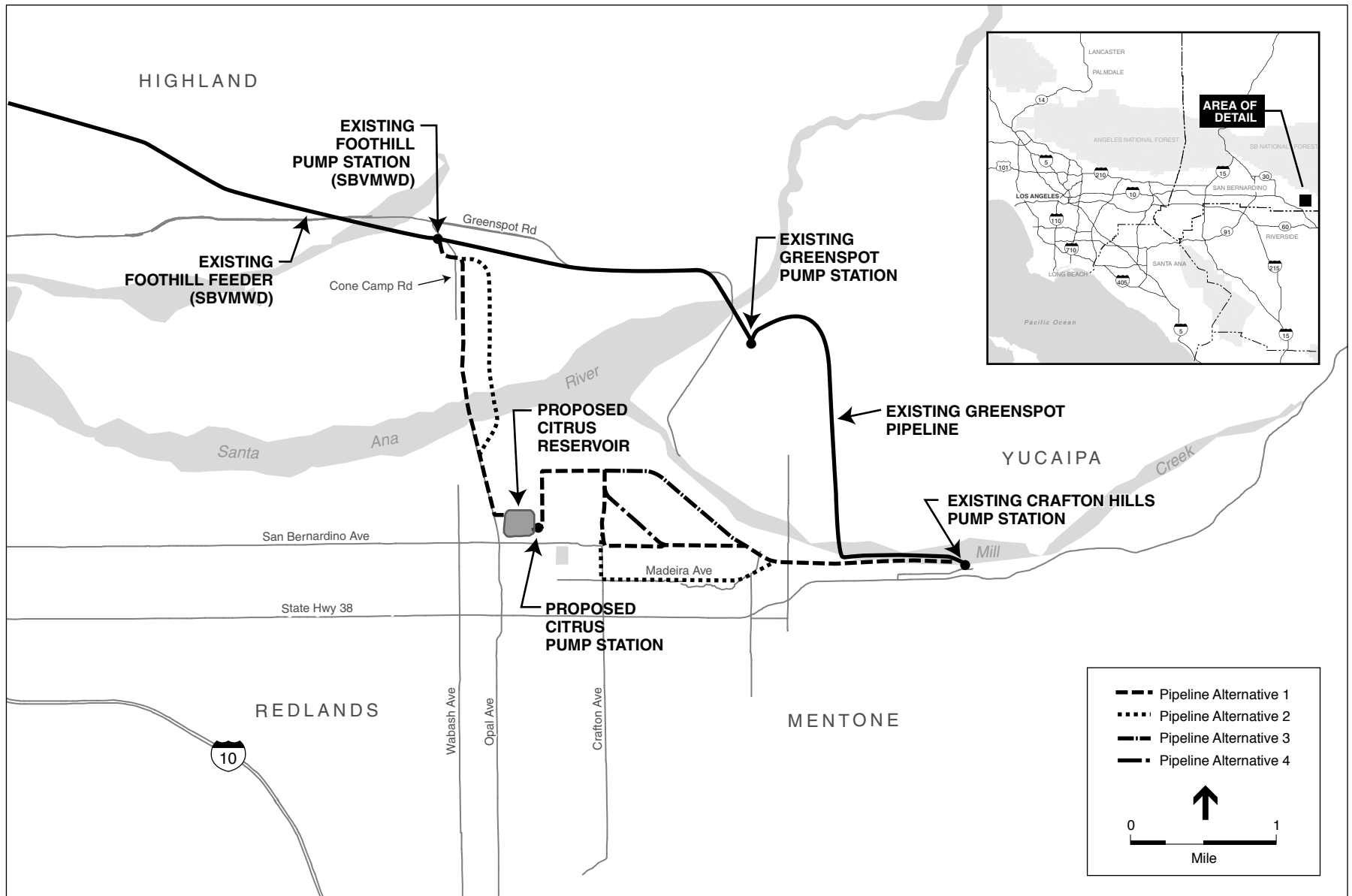
The proposed project would include construction of the following facilities:

- Approximately six miles of 72 or 78-inch pipeline within one of four proposed alignments
- A 560 af storage reservoir (Citrus Reservoir)
- A pump station (Citrus Pump Station)
- Expansion of the existing Crafton Hills Pump Station
- An additional pump at the existing Cherry Valley Pump Station

A schematic of existing and proposed facilities is shown in **Figure 2-1**. **Table 2-1** provides a summary of project facilities. The proposed project is scheduled for completion in 2012.

This Project Description is organized as follows:

- Section 2.2, Purpose and Need;
- Section 2.3, Project Objectives;
- Section 2.4, Description of Proposed Project;
- Section 2.5, Construction Methods;
- Section 2.6, Operation of East Branch Extension;
- Section 2.7, Alternatives;
- Section 2.8, Intended Uses of the Environmental Impact Report (EIR) / Project Approval.



SOURCE: Street Map USA; ESA, 2008.

DWR - East Branch Extension . 206008.01

Figure 2-1
Project Location

**TABLE 2-1
DWR EAST BRANCH EXTENSION PHASE II
SUMMARY OF PROPOSED IMPROVEMENTS**

East Branch System Facility	Improvements
Pipelines (Alternative Alignment 1, 2, 3, or 4)	Installation of approximately six miles of 72 or 78-inch pipeline, extending from the Foothill Pipeline near the intersection of Cone Camp and Greenspot Roads to the Crafton Hills Pump Station on Mill Creek Road.
Citrus Reservoir	Construction of a new reservoir within an existing citrus orchard north of San Bernardino Avenue, providing 560 acre-feet of water storage. The water surface area would be approximately 21 acres.
Citrus Pump Station	Construction of a new pump station adjacent to the new reservoir, consisting of a 20,000-square-foot, single-story structure. The pump station would include ten pumps totaling 200 cfs pumping capacity.
Expansion of Crafton Hills Pump Station	Expansion of the existing Crafton Hills Pump Station to accommodate additional pump units, motors, valves, and piping. The expansion also includes an additional forebay tank. Three 25 cfs pumps would be added to increase the capacity to 135 cfs.
Cherry Valley Pump Station	Installation of an additional pump unit, motors, valves, and piping at the existing Cherry Valley Pump Station. One 24 cfs pump would be added to the station bringing the total pumping capacity to 56 cfs.

SOURCE: ESA, 2007

2.2 Purpose and Need

The SGPWA is a State Water Contractor with a SWP Table A amount of 17,300 afy. The Water Importation Project initiated by SGPWA in 1994 envisioned a water conveyance system that could convey its full SWP Table A amount to its service area. The first phase of this system completed in 2003 utilized SBVMWD's existing Foothill Pipeline and the Greenspot Pipeline system to convey water from the Devil Canyon Power Plant Afterbay to the new East Branch Extension Pipeline Reach 1 east and north of the Crafton Hills (see Figure 1-3). Phase I was constructed with the capacity to convey up to 8,650 afy. The proposed project (Phase II) would install a new pipeline across the Santa Ana River that would increase water delivery capacity of the system, allowing SGPWA to receive its full future Table A amount of 17,300 afy¹ (8,650 afy greater than the capacity of Phase I), plus additional water amounts that may be available under Article 21. Article 21 water is SWP water that has been available in some years to State Water Contractors, generally during the winter months.

The proposed project provides greater system operating flexibility by increasing water storage capacity in the Citrus Reservoir. The additional storage capacity would increase off-peak pumping capabilities. Water deliveries to SGPWA would be used to remediate overdrafted groundwater basins as well as meet direct potable demands. Water delivered to SGPWA through

¹ SGPWA's Table A amount is set to increase incrementally from 8,650 afy in 2003 to 17,300 afy by 2011 per the schedule outlined in its long-term water supply contract with DWR. Phase I was designed to convey SGPWA's 2007 Table A amount of 8,650 afy (DWR, 2007f).

the East Branch Extension would be either recharged into the ground using existing recharge basins, or treated and conveyed to customers for potable use.

The proposed project would increase the amount of SWP water the SBVMWD could deliver to the Redlands and Yucaipa Valley areas. Water delivered to SBVMWD through the East Branch Extension would be used for irrigation, groundwater recharge, recreation, or treated and conveyed to customers for potable use in the Redlands or Yucaipa Valley areas.

2.3 Project Objectives

The objectives of the proposed project include the following:

- Increase the conveyance capacity of the East Branch Extension of the California Aqueduct sufficient to deliver SGPWA's maximum annual SWP Table A amount, when available;
- Allow SBVMWD to meet its delivery commitments in the Yucaipa, Mill Creek, and Eastern Valley Areas using SWP water;
- Use SWP water to maintain adequate groundwater level conditions that exist in the Beaumont Storage Unit;
- Enhance operational flexibility of water deliveries to the SBVMWD and SGPWA service areas;
- Provide additional storage capacity to enhance system reliability and allow more off peak pumping;
- Provide sufficient pumping capacity to adequately support system requirements; and
- Decrease the demand on the electrical power grid by decreasing on peak pumping.

2.4 Description of Proposed Project

The proposed activities are sited within public and private lands and existing DWR easements. Acquisition of right-of-way and temporary construction easements would be acquired for the construction of the pipelines, Citrus Reservoir and Citrus Pump Station. Temporary construction easements would also be required for contractor staging areas and equipment and materials storage. The following sections describe the proposed project components.

2.4.1 Pipeline Alignments

The proposed project would involve construction of approximately six miles of 72 or 78-inch diameter pipeline. Appurtenant facilities would include vaults for blow-off valves, air and vacuum valves, dewatering risers, flow meters, and inline valves. Air and vacuum valves, blow off valves, or dewatering risers would be constructed approximately every 1,000 feet, at high and low points of the pipeline alignment. Thirty concrete access vaults would be constructed at irregular intervals to provide access to all the valves and manhole accesses to the pipeline. Finished vault heights would range from 18 to 30-inches above ground. Vaults would be larger for line valves and flow meters. The vaults would be pre-cast concrete structures having dimensions of six feet by eight feet and

eight feet by eight feet. Cathodic protection would be provided to protect the pipeline from the corrosive soil environment.

This EIR will analyze four different pipeline alignments: Alternative Alignment 1, Alternative Alignment 2, Alternative Alignment 3, and Alternative Alignment 4. All alignments would begin at the Foothill Pipeline and terminate at Crafton Hills Pump Station. **Figure 2-2** shows each alignment. **Figures 2-3** through **2-5** provide more detailed views of the alignments and construction area.

Alternative Alignment 1

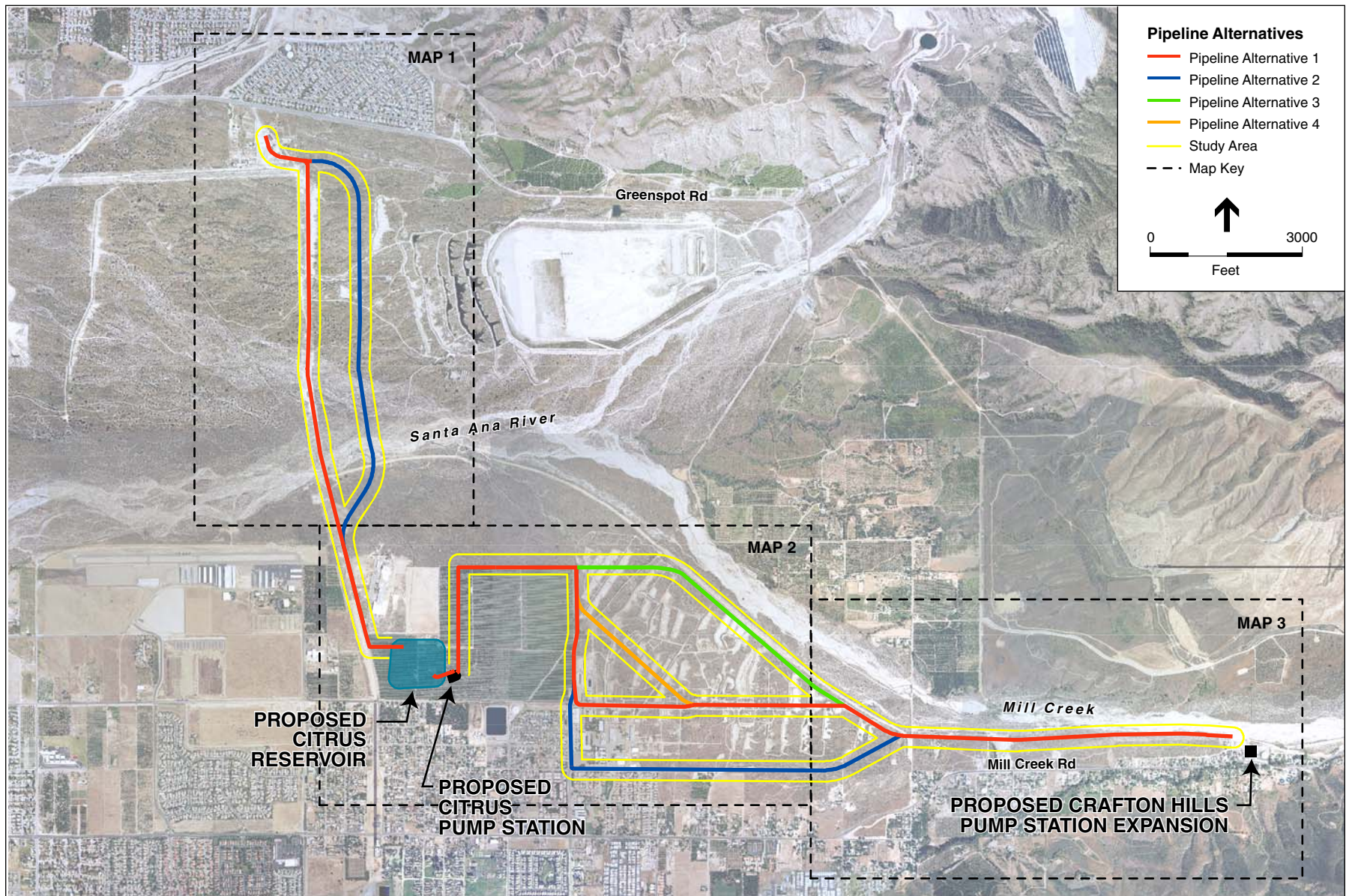
Alternative Alignment 1 would extend south from the Foothill Pipeline parallel to the Metropolitan Water District of Southern California's (MWD) recently installed Inland Feeder pipeline. The pipeline would cross the Santa Ana River and continue along Opal Avenue, turning east into a parcel presently developed as a citrus orchard. The pipeline would feed the Citrus Reservoir at this location. The pipeline would then continue from the proposed new Citrus Pump Station to the northern edge of citrus orchard. The pipeline would then turn east along the top of the orchard. The pipeline would then turn south, bordering the edge of the orchard. At San Bernardino Avenue, the pipeline would turn east following the existing roadway to the Mill Creek flood control levee. The pipeline would be installed within San Bernardino Avenue but the 250-foot construction corridor could encroach onto adjacent properties. The pipeline would parallel the Mill Creek flood control levee to the Crafton Hills Pump Station. Roadways affected by Alternative Alignment 1 include: Cone Camp Road, Opal Avenue, and Garnet Street.

Alternative Alignment 2

Alternative Alignment 2 would be similar to Alternative Alignment 1 except that the north-south alignment across the Santa Ana River historic flood plain would be located approximately 500 feet to the east. The east-west portion of Alternative Alignment 2 would follow Crafton Avenue south one block to Madeira Avenue. The alignment would follow Madeira Avenue to the Mill Creek flood control levee and parallel the levee to the Crafton Hills Pump Station. The pipeline would be installed within Madeira Avenue but construction activities could occur on adjacent properties. Roadways affected by Alternative Alignment 2 include: Cone Camp Road, Opal Avenue, Crafton Avenue, Madeira Avenue, Amethyst Street and Garnet Street.

Alternative Alignment 3

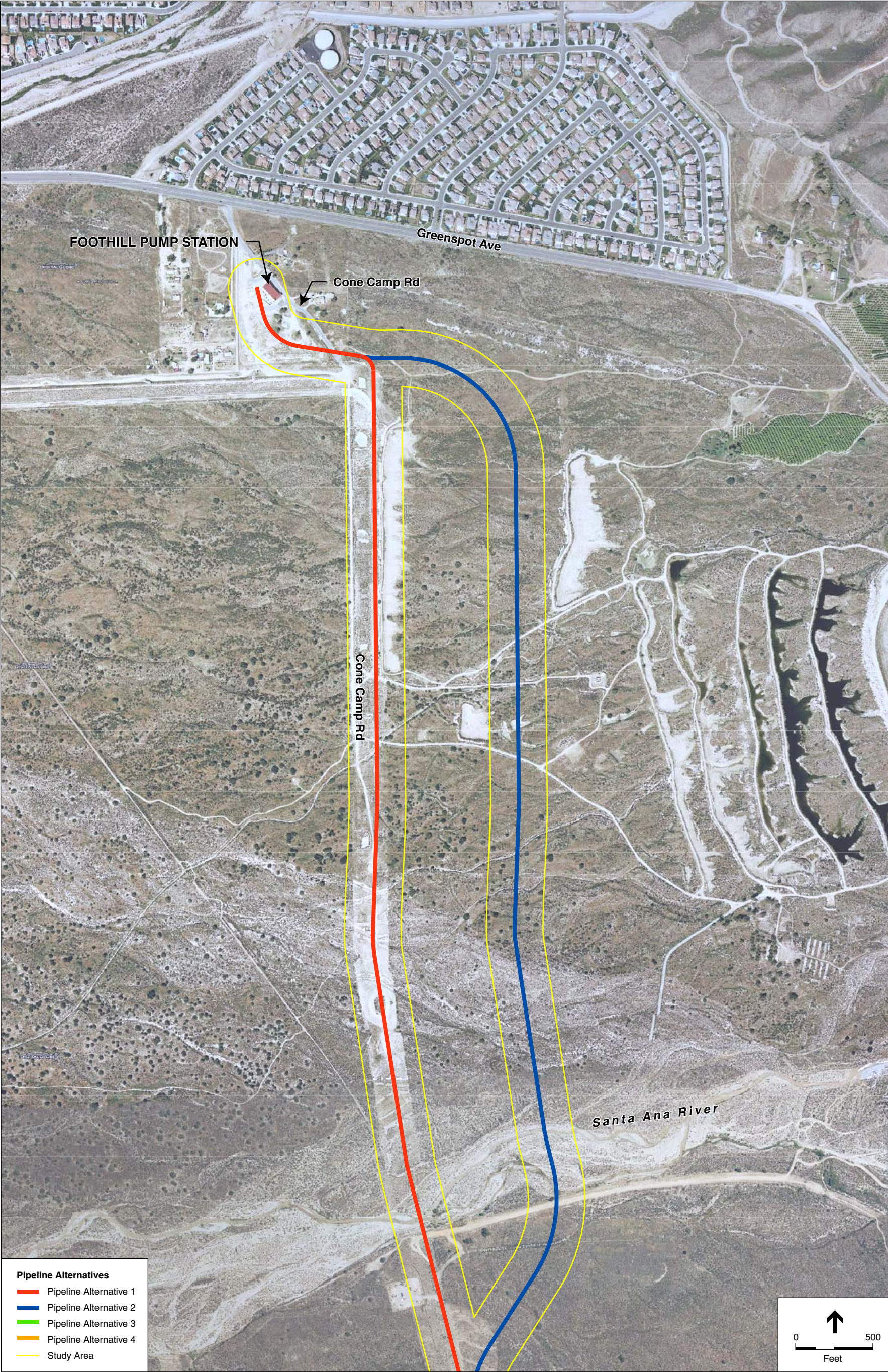
Alternative Alignment 3 would be similar to Alternative Alignment 1 crossing the Santa Ana River to the Citrus Pump Station. From the Citrus Pump Station the alignment would extend northward to the top of the orchard. From the northern end of the orchard, the pipeline would travel east, following to orchard until it met the Mill Creek levee wall. The alignment would follow the flood control levee to Crafton Hills Pump Station. Roadways affected by Alternative Alignment 3 include: Cone Camp Road, Opal Avenue, and Garnet Street.



SOURCE:GlobeXplorer, 2007; ESA 2008.

DWR - East Branch Extension . 206008.01

Figure 2-2
East Branch Extension
Phase II Project Components



SOURCE: GlobeXplorer, 2007; ESA 2007.

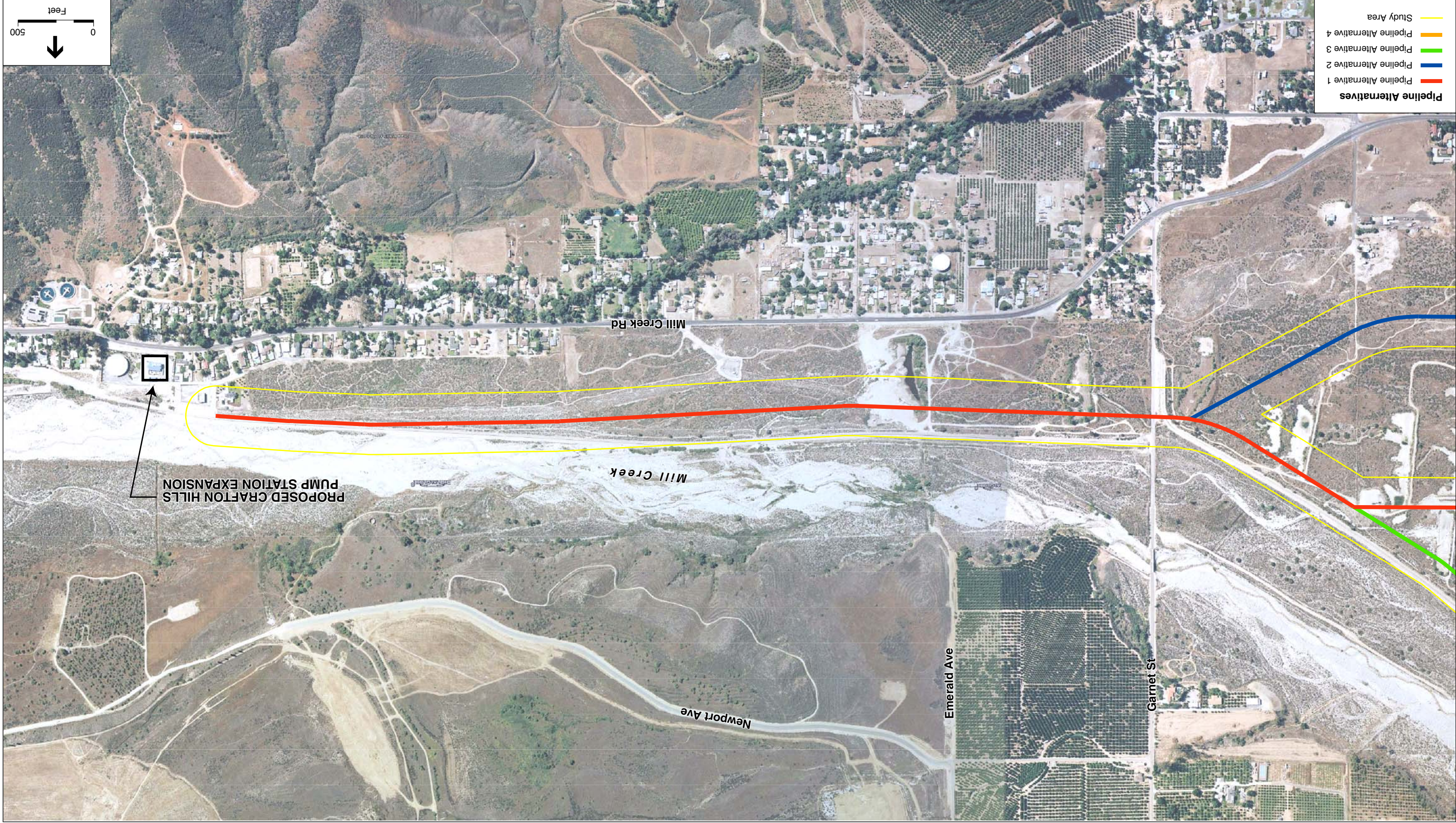
DWR - East Branch Extension . 206008.01

Figure 2-3
Map 1 - EBX Phase II
North Segment



SOURCE: GlobeXplorer, 2007; ESA 2008.

DWR - East Branch Extension . 206008.01
Figure 2-4
Map 2 - EBX Phase II
Central Segment



DWR - East Branch Extension, 206008.01
Figure 2-5
Map 3 - EBX Phase II
East Segment

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Alternative Alignment 4

Alternative Alignment 4 would be similar to Alternative Alignment 1 crossing the Santa Ana River to the Citrus Pump Station. From the Citrus Pump Station the alignment would extend northward to the top of the orchard. From the northern end of the orchard, the pipeline would travel east, following the orchard, turning south along the orchard boundary for approximately 600 feet. The pipeline would then extend southeastward across property used for percolation ponds by the SBVWCD. The alignment would rejoin the Alternative Alignment 1 at the projected San Bernardino Avenue. Roadways affected by Alternative Alignment 4 include: Cone Camp Road, Opal Avenue, and Garnet Street.

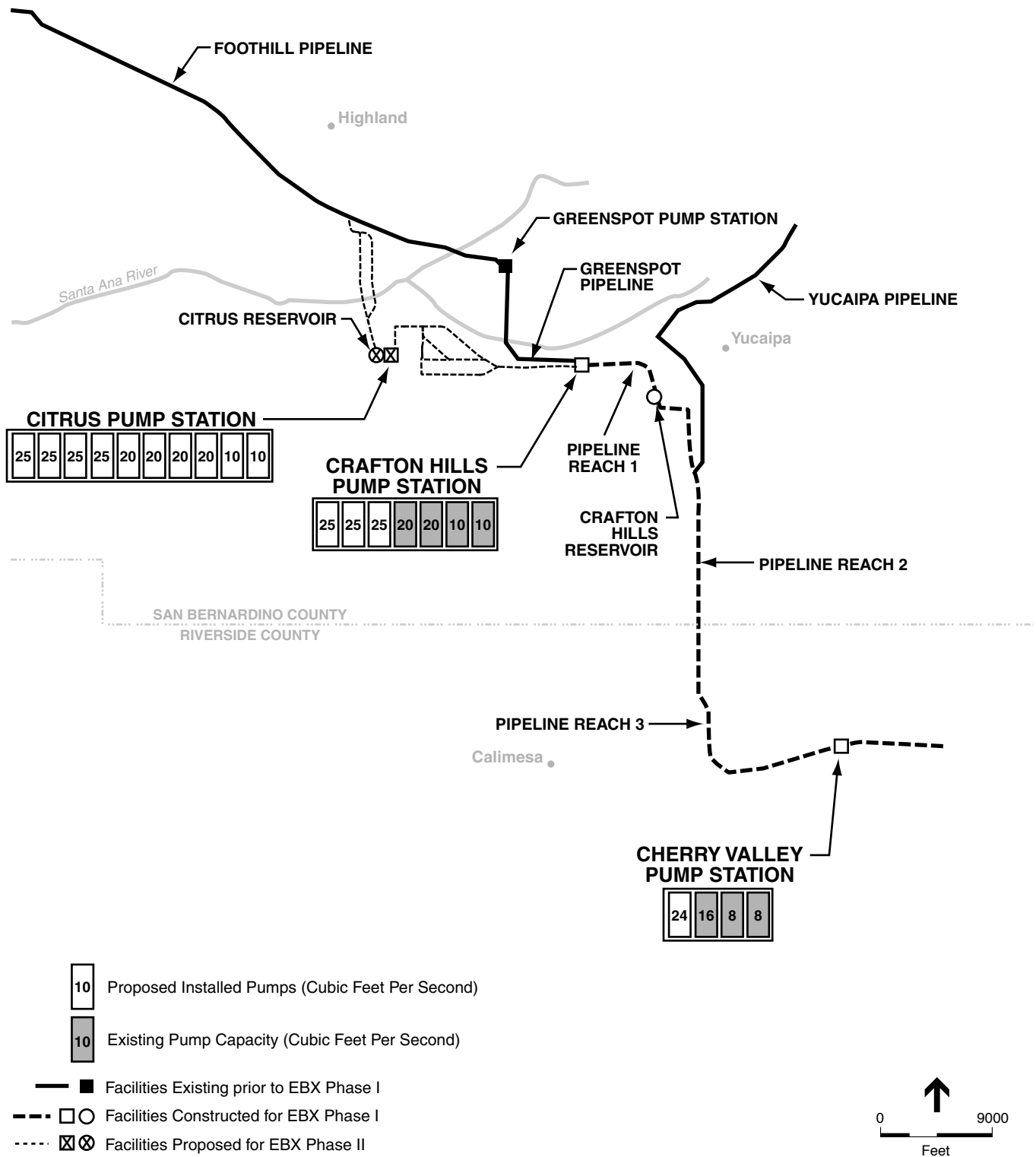
2.4.2 Citrus Reservoir

A reservoir providing approximately 560 af of storage would be constructed within an existing citrus orchard, approximately 200 feet north of San Bernardino Avenue (see Figure 2-2). The reservoir would be constructed within an approximately 35-acre construction area. The 560 af reservoir would have dimensions of approximately 1,000 feet by 900 feet, covering an area of approximately 21 acres. The reservoir would have a maximum water surface elevation of 1,638 feet above mean sea level (amsl). The reservoir bottom would be about 40 feet below the existing ground surface elevation on the western edge (approximately 70 feet below ground surface on the eastern edge). The area around the edges of the reservoir would be excavated to this elevation to accommodate the pump station and switchyard (described in next section). A berm no greater than six feet may be installed around the perimeter of the reservoir, although maximum water level elevations would be below the graded surface elevation. The reservoir would be designed with an impermeable liner to minimize the potential for seepage from the reservoir. The reservoir would increase storage capacity providing more operational flexibility. The reservoir would be enclosed by a chain link fence.

2.4.3 Citrus Pump Station

The proposed pump station would be located adjacent to Citrus Reservoir either on the east or west side of the reservoir depending on final design requirements. The pump station would pump water from Citrus Reservoir through the proposed easterly pipeline to the Crafton Hills Pump Station. The pump station, consisting of pumping units, motors, emergency generator, valve and flow meter vault, masonry building, connecting pipeline, and related equipment, would be housed in an approximately 20,000-square-foot, single-story structure. The structure would be approximately 30 feet in height. The foundation of the pump station would be located below existing grade. Outdoor security lighting would be mounted on the building.

The building would contain ten pumping units; two pumps each with 10 cfs capacity, four pumps each with 20 cfs capacity, and four pumps each with 25 cfs capacity. **Figure 2-6** identifies the new capacity for each pump station in the system. The proposed project includes the installation of 200 cfs pumping capacity. The structure would be enclosed by a chain link fence. Potable water would be supplied to the pump station from the City of Redlands water main on San Bernardino Avenue. A septic system with a leach field would be constructed to accommodate



SOURCE: ESA, 2008

DWR - East Branch Extension . 206008.01

Figure 2-6
East Branch Extension-Phase II
Pump Station Capacities

restrooms at the pump station. Power would be supplied to the Citrus Pump Station via a Southern California Edison (SCE) 115 kilovolt (kv) transmission line. The power supply line would connect to an external switch yard that would be located adjacent to the pump station. The power poles would be approximately 80 feet tall, matching the existing power poles on San Bernardino Avenue. The switch yard would be surrounded by a chain link fence and would be shielded from views by the remaining orchard. An emergency generator would also be installed so the system could operate in the event of power failure. **Figure 2-7** provides a site plan of the Citrus Pump Station and **Figure 2-8** shows a plan view of the proposed topographic relief.

The architectural features of the pump station will consist of concrete masonry unit walls, architectural wall panels, and standing seam metal roof panels. Construction of the pump station will use low emitting materials (Volatile Organic Compound, VOC'S) paints, sealants and adhesives; rapidly renewable materials; and materials selected based on their thermal resistive properties, particularly those used for the building envelope. The pump station will also be designed to optimize energy performance, thermal performance, and will incorporate elements consistent with the US Green Building Council's (USGBC) rating system of Leadership in Energy and Environmental Design (LEED).

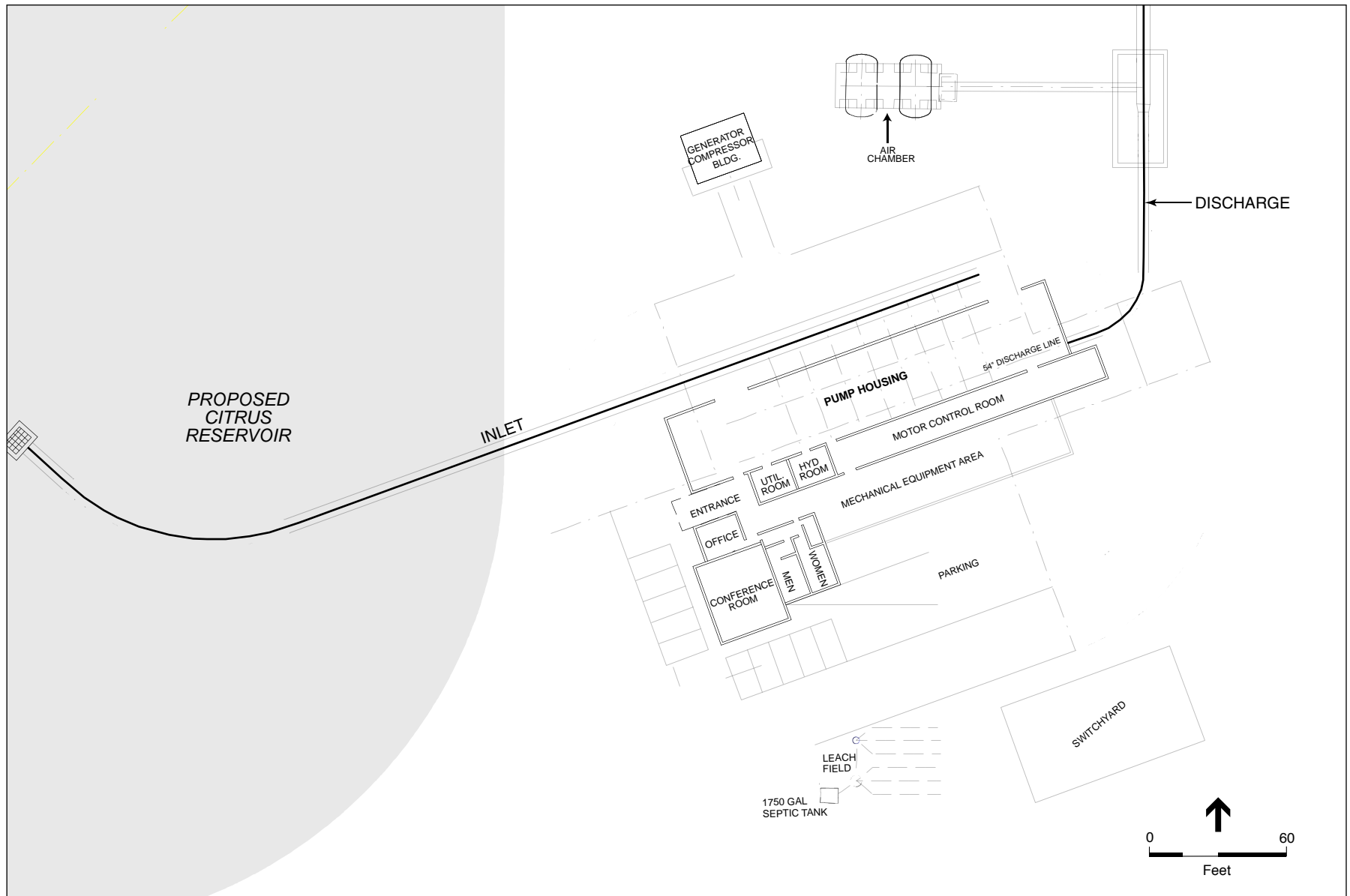
2.4.4 Crafton Hills Pump Station Expansion

The existing pump station currently contains two pumps each with 10 cfs capacity and another pump with 20 cfs capacity, for a total existing capacity of 40 cfs. An additional 20 cfs spare pump has recently being installed. A categorical exemption was filed to comply with CEQA for the installation of this additional pump. A 3,500-square foot annex to the existing Crafton Hills Pump Station would be constructed as part of the proposed project to house three new pumps, each with 25 cfs capacity (see Figure 2-6). Upon completion of the proposed project, the Crafton Hills Pump Station would have a total capacity of 135 cfs (with no pumps reserved as backup). An additional forebay tank and surge air chamber would also be constructed.

The construction would occur entirely within the property of the existing Crafton Hills Pump Station fence-line and the existing SBVMWD's Tate Pump Station fence-line. **Figure 2-9** shows the proposed footprint modification of the pump station

2.4.5 Cherry Valley Pump Station

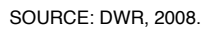
The existing Cherry Valley Pump Station includes two pumps, each with an 8 cfs capacity. An additional 16 cfs spare pump has recently been installed. A categorical exemption was filed to comply with CEQA for this additional pump. The proposed project would include the addition of a 24 cfs pump in the existing building. Upon completion of the project, the Cherry Valley Pump Station would have a total capacity of 56 cfs. There would be no site improvements or building expansion at the Cherry Valley Pump Station; the proposed new pump would be contained within the existing building.

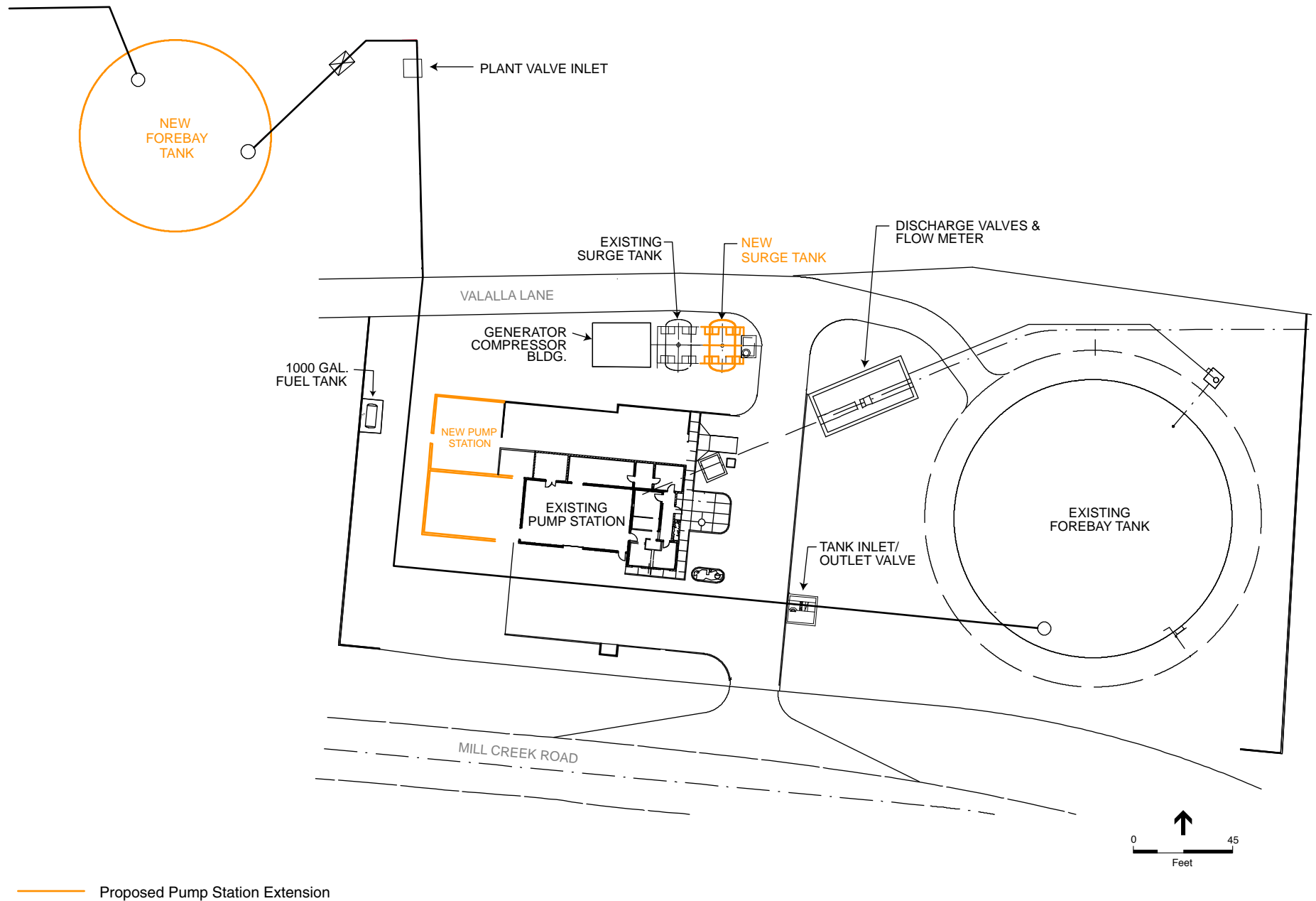


SOURCE: DWR; ESA 2007.

DWR - East Branch Extension . 206008.01

Figure 2-7
Proposed Citrus Pump Station





SOURCE: DWR, 2007.

DWR - East Branch Extension . 206008.01

Figure 2-9
Proposed Footprint Modification
of Crafron Pump Station

2.5 Construction Methods

With the exception of the Cherry Valley Pump Station, construction activities for proposed facilities would require initial clearing and grading at each site to accommodate excavation and staging activities. Construction of the proposed facilities would require disturbance of land that either has or has not been previously disturbed. The proposed reservoir and pump station would be within a disturbed and developed orchard and the Crafton Hills Pump station expansion would be located on previously disturbed land. No land clearing or grading would be required at the Cherry Valley Pump Station because the proposed pump installation would occur within the existing building. Disturbed areas would be restored to pre-construction conditions.

Truck deliveries would be based on the type and intensity of activity at each site, as well as the amount of equipment and exported or imported material required. Truck delivery routes would include local roads including but not limited to: San Bernardino Avenue, Orange Street, Opal Avenue, Crafton Avenue, Garnet Street, Interstate 215, Interstate 10, State Route (SR) 30, SR 38, Citrus Avenue, Church Street, University Street, Judson Street, Wabash Street, Bryant Street, Greenspot Road, Cone Camp Road, and other local streets.

For all construction areas, exported spoils would be rocks too large to use for backfill or in structural fills. These oversized rocks may be sold as rip rap or to a crushing plant for construction aggregates. To the extent feasible, all excavated material would be processed by screening to remove oversized pieces (larger than six inches), to produce materials suitable for structural fill (smaller than three inches) and pipe bedding and pipe zone backfill (one inch and smaller). Material excavated for the pipeline installation would be stockpiled on site and used for backfill; excess material would be spread on site. Material excavated for the storage reservoir would be removed from the site, and sent to aggregate processing plants or to other construction sites requiring fill. Nighttime construction may be needed in a few locations. Where the pipeline crosses adjacent to the end of the Redlands Airport runway, nighttime construction may be needed to avoid impacts to aviation. The construction methods in this location would be carefully coordinated with the airport. In addition, nighttime construction could be used during the Santa Ana River channel crossing to accommodate operations of Seven Oaks Dam. Nighttime construction would not be used for installation of the pipeline segments near residential areas. However, nighttime construction may be needed during the Santa Ana River crossing and during construction at the end of the Redland Municipal Airport's runway.

2.5.1 Pipeline

The pipeline would be constructed using trench excavation and installation techniques, and would generally include the following activities:

- Grubbing and clearing of an approximately 250 foot wide construction corridor,
- Excavation to a depth varying from 14 to 50 feet,
- Stockpiling of excavated soil and rocks,
- Pipeline staging and placement in the trench,

- Connection of pipeline segments and placement of engineered backfill in the lower portion of the trench covering the pipeline,
- Backfill of remaining trench to original surface elevation with excavated materials,
- Final alignment grading, and
- Site restoration.

The width of the construction zone would vary depending on biological constraints, land use constraints, trench depth, trench type (sloping walls or shored vertical walls), and the location of staging and stockpiling areas.

The trench depth is estimated at 14 to 50 feet, with a bottom trench width of 10 feet. The trench width at the ground surface would vary from 40 to 120 feet wide for sloping wall construction techniques and 10 to 15 feet wide for shored vertical walls. It is anticipated that sloping walls would be predominately used because of the difficulty in shoring the coarse alluvium within the pipeline route.

Approximately 550,000 cubic yards (cy) of material would be excavated during pipeline construction; temporary stockpiling would occur adjacent to the trench. As discussed above, to the extent possible, excavated spoils would be used for backfill, oversized rocks and displaced excavated material would be spread on site within the Santa Ana River Wash. Some material may not be suitable for use as backfill and would be removed from the site. It is estimated that 1,000 cubic yards of material would be exported from the construction corridor. Approximately 5,000 cy of soil and 6,000 cy of concrete would be imported for backfill. Delivery of this material would require approximately 1,200 truck trips over the course of the two-year construction period.

The pipeline under the active stream channel would be encased in concrete for protection from fluvial sediment movement and to prevent empty pipes from floating on groundwater. Minimum depth to top of pipe is anticipated to be approximately seven feet at most locations. Crossing the Santa Ana River, the depth of the top of the pipe may be greater than 43 feet deep.

Pipeline installation is expected to proceed at a rate of approximately 80 feet per day. Crossing the Santa Ana River active channel would require temporary diversion of stream flows around the construction zone, if surface water is present. This temporary diversion would be necessary for a maximum of twelve weeks and would occur during the dry season when flood flows would not be expected. If groundwater is encountered during excavation, the trench would require dewatering. Discharges from trench dewatering would comply with the Santa Ana Regional Water Quality Control Board's (RWQCB) requirements. On site construction water for soil compaction and equipment cleaning would be supplied by the SBVMWDs Foothill and Greenspot pipelines.

During construction, vertical wall trenches would be temporarily closed at the end of each work day, either by covering with steel trench plates, backfill material, installing barricades, or fencing to restrict access, depending on physical conditions and conditions of the encroachment permit (along roadways). If the area is paved prior to construction, a temporary patch or covering would

be used until final repaving of the affected area occurs. Final paving would occur approximately two to six weeks after pipeline construction is complete within a given road segment. Roadways would be restored to pre-construction conditions. Within undeveloped areas, the pipeline corridor would be reseeded to restore disturbed areas.

The pipeline would be constructed by up to two or more construction crews totaling up to approximately 50 or more employees over the course of an 18 to 24-month construction period (see **Table 2-2**). Geologic explorations may occur along the selected pipeline route to determine the makeup of the subsurface conditions. Construction equipment anticipated for construction of the pipeline is described in **Section 2.5.6**.

2.5.2 Citrus Reservoir

The reservoir would be constructed as follows:

- Clearing and grubbing of the construction area, which involves the removal of the citrus trees and structures within the construction footprint;
- Excavation of the embankment foundations and reservoir impoundment area;
- Recomposition of the reservoir impoundment for liner construction;
- Construction of embankments;
- Concrete work, including construction of the inlet and outlet;
- Installation of piping and appurtenant structures; and
- Finish work on the embankment and reservoir, consisting of placement of access roads, fencing, final grading and cleaning.

About 35 acres of citrus trees would be removed to accommodate the proposed reservoir and associated facilities. The trees could be removed through on site chipping and sold as landscape mulch or hauled to regional landfill as green-waste disposal.

Approximately 1,800,000 cy of material would be excavated to construct the reservoir. This includes grading the site and excavating the reservoir. The reservoir would be excavated to a depth of approximately 45 feet below the elevation on the western edge and approximately 70 feet below the existing elevation on the eastern edge. Excavated materials may be hauled off site to local quarries or processed and crushed on site. Approximately 200,000 cy of the 1.8 millions cy would be screened and sorted on site. Some material would also be used in grading the site and constructing the six-foot high berm around the perimeter of the reservoir. Some stockpiling of the material on site would be required until it is entirely removed. The removal of excavated materials would require approximately 230-460 trucks daily hauling 20 cy each for a period of 18 to 36 months. The material may be hauled to local quarries. A potential haul route would follow San Bernardino Avenue westward from Opal Avenue to Orange Street, then north on Orange Street to the quarries within the Santa Ana River wash. An alternate haul route would follow Opal Avenue to Lugonia Avenue to Highway 30 northbound, then east on Greenspot Road to Orange Street, then south to the quarries. Approximately 1,500 cy of concrete would be imported and approximately 120,000 cy of soil would be imported. This soil would be

**TABLE 2-2
SUMMARY OF ANTICIPATED CONSTRUCTION ACTIVITIES
FOR PROJECT COMPONENTS**

Construction Activity	East Branch Extension Pipeline	Citrus Reservoir	Citrus Pump Station	Crafton Hills Pump Station Expansion	Cherry Valley Pump Station	Project Total
Construction duration, months	18-24	18-36	36	24	3-6	Up to 36 months (three-years)
Excavation, cy	550,000	1,800,000	50,000	12,000	0	2,412,000
Exported Spoils, cy	1,000	1,800,000	25,000	6,000	0	1,832,000
Backfill Material, cy	440,000	0	25,000	6,000	0	471,000
Imported Concrete, cy	6,000	1,500	2,000	1,400	0	10,900
Imported Soil, cy	5,000	120,000	0	0	0	125,000
Other Major Deliveries	Approx. 32,000 linear feet of 72" or 78" pipe and 1,700 tons of steel reinforcement/rebar.	Inlet Structure. Approx. 27,000 tons of asphalt concrete or other materials for lining.	Building materials 10 pumps	Building materials 3 pumps	One new 24 cubic foot per second capacity water pump	
Likely haul routes	Cone Camp Rd, Greenspot Rd, San Bernardino Ave, Opal Ave, Crafton Ave, Garnet St, State Route 38	San Bernardino Ave, Opal Ave, Crafton Ave, State Route 38	San Bernardino Ave, Opal Ave, Crafton Ave, State Route 38	State Route 38, Valalla Ln	State Route 10, Cherry Valley Blvd., Union Street, Taylor Drive	Varies
Depth of excavation, feet	14-50 feet	45-70 feet	45-60 feet	45-60 feet	0	Varies
Crew size	25+ (for each heading)	35 (two crews)	20+	20+	5	Varies

SOURCE: ESA, based on construction activity information provided by DWR, 2008

silty-clay soil for transitions layers between the sand-gravel-cobble subgrade and reservoir lining. Asphalt concrete and other lining materials would be transported to the site to seal the reservoir. It is estimated that approximately 27,000 tons requiring approximately 1,500 truck trips would be needed to import this material. The material would be trucked to the reservoir site from a manufacturing plant in the region or be mixed on site.

One construction crew of 35 employees at the peak of construction is anticipated (see Table 2-2). Construction of the reservoir is anticipated to take approximately 18 to 36 months; construction equipment is described in **Section 2.5.7**.

2.5.3 Citrus Pump Station

Construction of the Citrus Pump Station would include the following activities:

- Grading of a foundation pad,
- Placing concrete for foundations,
- Building construction,
- Construction of a transmission line tie-in,
- Inlet excavation and installation,
- Pumping unit installation,
- Air Chamber, and
- Valve vault
- Construction of a substation

Grading and excavation would generate approximately 50,000 cy of material. Approximately 25,000 cy would be used for site grading; the remaining 25,000 cy would be exported off site. The material would require eight trucks daily hauling 20 cy for a period of eight months. Excavated material may be hauled to local quarries using the same potential haul route described in the Citrus Reservoir section, above. Approximately 2,000 cy of concrete would be imported.

One construction crew of approximately 20 employees at the peak of construction is anticipated (see Table 2-2). Construction of the pump station is anticipated to take approximately thirty six months; construction equipment is described in Section 2.5.7. Construction of the pump station would include the construction of a 115 kv transmission line extension. The power pole would be approximately 80 feet tall. The routing and location of the line is dependant upon the location of the pump station and planned development in adjacent properties. A 115 kv substation would be constructed by DWR adjacent to the Citrus Pump Station to control and meter electric use and reduce voltage from 115 kv to 4.16 kv for the pump station.

2.5.4 Crafton Hills Pump Station Expansion

Construction would include a second forebay tank of reinforced post-tension concrete, fabrication, transportation and installation of a second surge tank (air chamber) and modifications to the existing main transformer in the existing substation. Grading and excavation would generate approximately 6,000 cy of material that would be exported off site. The material would require four trucks daily hauling 20 cy for a period of four months. Excavated material may be hauled to local quarries. A potential haul route for this material would follow SR 38 westward to Orange Street, then north to the quarries within the Santa Ana River wash. Approximately 1,400 cy of concrete would be imported. One construction crew of approximately 20 employees

is anticipated during the twenty four month construction period (see Table 2-2). Construction equipment is described in Section 2.5.7.

2.5.5 Cherry Valley Pump Station

This component of the project would include the installation of a 24 cfs, 450 horse power pump and motor in the existing building. No modifications to the exterior of the building or pump station grounds would be required.

2.5.6 Staging Areas

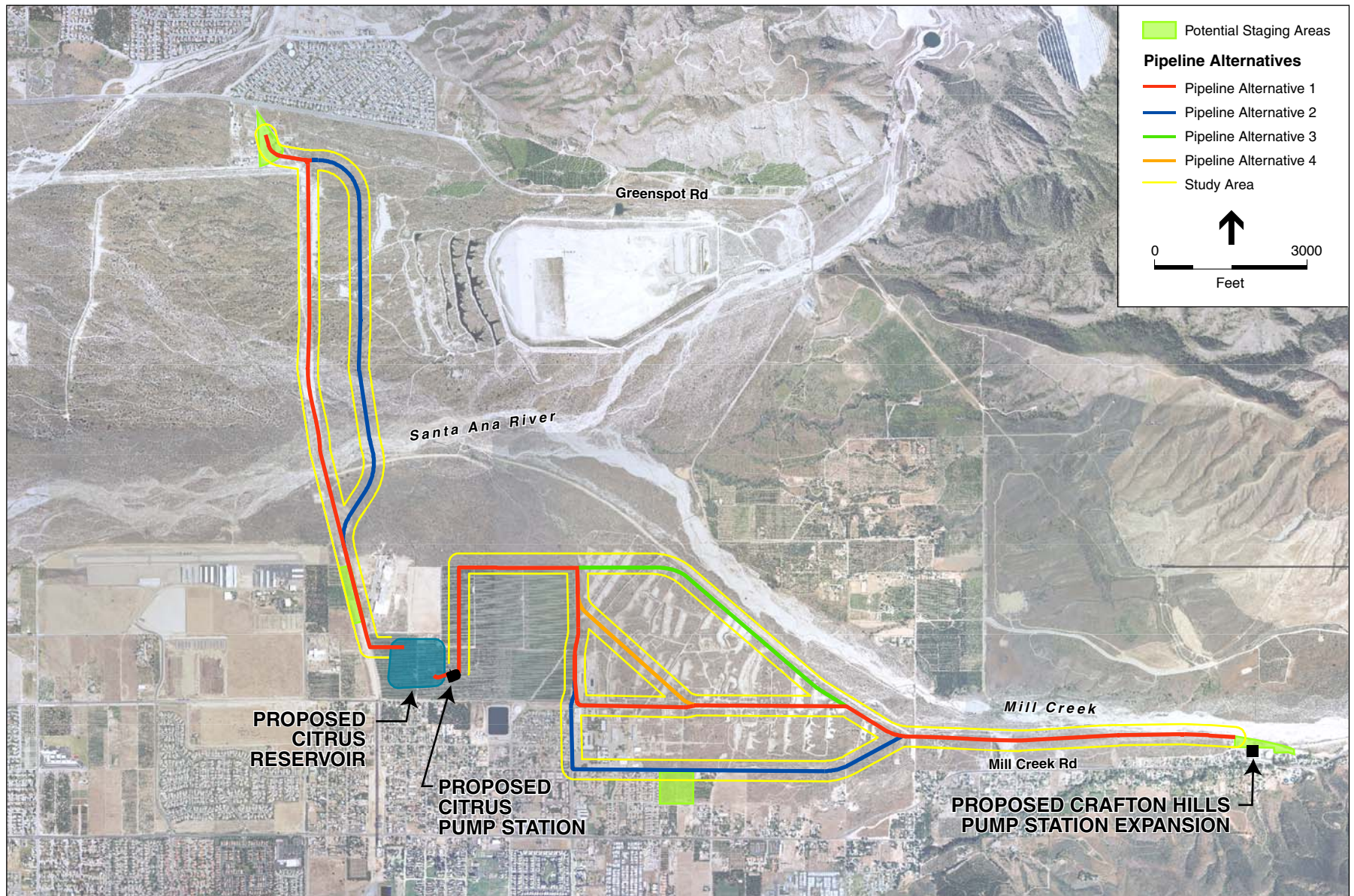
At various locations within the construction zones, staging areas would be required to store pipe, construction equipment, and other construction related items. Staging areas would be established in areas near construction zones that are open and easily accessed (e.g., vacant lots). In some cases, staging areas may be used for the duration of the proposed construction. In other cases, as pipeline construction moves along the route, the staging area may also be moved to minimize hauling distances and avoid disrupting any one area for extended periods of time. Generally the staging areas would be located in previously disturbed or non-vegetated areas and not within sensitive areas such as a wetland or a stream. **Figure 2-10** identifies proposed staging area locations. MWD owns several acres of land adjacent to the Foothill Pump Station that may be used as a staging area. The area is vacant and disturbed by construction activities associated with the Inland Feeder pipeline and Foothill Pump station. An additional small area of vacant and disturbed land that is suitable for staging is located north of the Crafton Hills Pump Station. This area is owned by SBVMWD. Another possible location for limited staging is the Inland Feeder pipeline right-of-way, north of San Bernardino Avenue and south of Redlands Airport flight path. This area is vacant and disturbed. This area could be used for pipe storage, a contractor's field office, equipment yard, or employee parking.

2.5.7 Construction Equipment

Construction would involve grading, excavation, building construction, and backfilling at the proposed project sites. Due to the size of the pipeline and the presence of large boulders throughout much of the alignment, the construction equipment for the most part would consist of large horse-power, heavy-duty machinery. Construction equipment anticipated for construction is shown in **Table 2-3**. The numbers in Table 2-3 are preliminary and may vary depending on construction contractors.

2.5.8 Construction Schedule

Construction activities for the proposed project are scheduled to be completed in three-years. Construction is anticipated to begin in 2009 and be completed in 2012. Construction duration at each facility would vary. Table 2-2 provides a breakdown of anticipated construction duration by facility.



SOURCE: GlobeXplorer, 2007; ESA 2008.

DWR - East Branch Extension . 206008.01

Figure 2-10
Proposed Staging Area Locations

**TABLE 2-3
CONSTRUCTION EQUIPMENT ESTIMATES**

Equipment	East Branch Extension Pipeline	Citrus Reservoir	Citrus Pump Station	Crafton Hills Pump Station Expansion
10-wheel Dump Truck	10	15	5	3
Backhoe	3	2	1	1
Bulldozer	2	3	1	1
Compactor	1	2	2	1
Concrete Truck	1	1	2	1
Crane	1	1	1	1
Earth Mover	1	0	1	1
Excavator	4	2	1	1
Flat Bed Truck	10	10	10	10
Front-end Loader	3	3	1	1
Jack hammer	2	1	1	1
Pavement Saw	2	1	0	1
Paver	1	1	1	1
Road Grader	1	1	1	1
Scraper	2	12	1	0
Side Boom Pipe Handler Tractor	2	0	1	1
Sweeper	1	1	1	1
Trench Shield	1	0	0	0
Tunnel Boring Machine	0	0	0	0
Water Truck	2	2	1	1
Welding Truck	4	1	1	1

SOURCE: Compiled by DWR.

2.6 Operation of East Branch Extension

The proposed project would complete the East Branch Extension as envisioned by SGPWA in their 1994 Water Importation Project, enabling delivery of its full SWP Table A amount plus additional water amounts that may be available under Article 21. As shown in Figure 1-3, Phase I completed in 2003 utilized SBVMWD's existing Foothill Pipeline to convey 8,650 afy through the Greenspot Pump Station and Pipeline to the new Crafton Hills Pump Station and Pipeline Reach 1 north of the Crafton Hills. Phase II would connect to the

Foothill Pipeline near the existing Foothill Pump Station and convey water across the Santa Ana River to the Crafton Hills Pump Station. The new East Branch Extension Pipeline, Citrus Reservoir, and Citrus Pump Station would provide the capacity needed to convey 17,300 afy from the Foothill Pipeline to the Crafton Hills Reservoir for delivery to SGPWA and SBVMWD customers.

The system would be designed with an 11 percent peaking factor, allowing 17,300 af of water to be delivered within a nine month period. The reliability of the SWP varies with wet and dry years. Currently DWR acknowledges that in an average rain year the SWP system delivers

63 percent of its Table A contractual commitments². Recent court decisions regarding the SWP withdrawal of water from the Sacramento-San Joaquin River Delta may reduce the reliability of water deliveries in the future an additional 30 percent.

The upgraded East Branch Extension system would operate on a year-round basis, supplying SWP water to SGPWA and SBVMWD customers east of the Crafton Hills. The pumps would initially operate an average of eight hours per day depending on daily demands. It is estimated, that during the project life, average pump operational time would gradually increase. The Crafton Hills Pump Station and the Citrus Pump Station are expected to operate up to 16 hours per day, seven days a week in the winter and up to 24 hours per day, seven days a week during the summer months. The pumping capacity at Crafton Hills Pump Station would increase from 60 cfs to 135 cfs. The Citrus Pump Station would be capable of pumping 135 cfs to the Crafton Hills Pump Station and an additional 65 cfs to other SBVMWD turnouts. The new pipeline would allow full delivery of SWP water to SGPWA. However, the Greenspot Pump Station and Greenspot Pipeline would remain in service to provide operational flexibility and system reliability.

The water level in the new storage reservoir would fluctuate daily depending on the operation of the pumps, but would largely remain filled enhancing delivery flexibility of the system. Once completed, the Citrus Pump Station would be the central control center. All other pump stations in the system would be operated remotely from the Citrus Pump Station.

The pump station would require up to four full time personnel. Maintenance staff would conduct periodic inspections of the pipelines, pump stations, and reservoir.

2.6.1 State Water Project Operations

As discussed in Chapter 1, DWR computes an annual Table A allocation percentage applicable to all contractors based on the available water supply each year. The allocation percentage is then applied to the contractors' Table A amounts to compute their annual Table A allocations. In some instances, individual contractors may not take delivery of their entire annual Table A allocation, in which case the unused portion of their allocation may be carried over to the next water year or sold back to DWR or other contractors through the turnback pool.

The East Branch Extension Phase II would not affect DWR's operations regarding the Delta since the SWP would continue to be operated within the regulatory requirements. The new capacity provided by the East Branch Extension Phase II would enable SGPWA to receive more of its Table A allocation. However, the amount of water actually received by SGPWA and SBVMWD would continue to be determined by the annual Table A percentages calculated by DWR for all contractors.

² DWR, 2007 Draft State Water Project Delivery Reliability Report.

2.7 Alternatives

An EIR must describe a range of reasonable alternatives to the proposed project or alternative project locations that could feasibly attain most of the basic project objectives and would avoid or substantially lessen any of the significant environmental impacts to the proposed project. The alternatives analysis must include the “No Project Alternative” as a point of comparison. The No Project Alternative includes existing conditions and reasonably foreseeable future conditions that would exist if the project were not approved (CEQA §15126(d)). Alternatives examined are discussed below.

2.7.1 No-Project Alternative

Under the No Project Alternative, DWR would not implement construction of facilities identified under the proposed project. This would maintain the current operation of Phase I facilities. Implementation of the No Project Alternative would not provide increased SWP water delivery, improved design capacity, or operational flexibility.

2.7.2 Alternative Pipeline Alignments

DWR assessed alternative pipeline alignments east of the proposed project that would connect Foothill Pipeline with Crafton Hills Pump Station. The alignments were eliminated from further consideration based on engineering, natural resource, and land use compatibility considerations.

2.7.3 Alternative Selection

The alternative analysis in Chapter 6 concludes that the proposed project is the environmentally superior alternative since it results in the least number of environmental impacts while meeting the project objectives. Of the four pipeline routes evaluated in full detail in the EIR, Chapter 6 concludes that although the alignments resulted in essentially similar impacts, Alternative Alignments 3 and 4 would result in the fewest environmental impacts.

DWR conducted an engineering-based feasibility analysis for the four alignments of the proposed project that recommends Alternative Alignment 3. However, four alternative alignments are evaluated at an equal level of detail to enable an even comparison of environmental constraints.

2.8 Intended Uses of the EIR / Project Approval

DWR intends to use this EIR to consider implementation of the East Branch Extension project. As Lead Agency, DWR may use this EIR to approve the proposed project, make Findings regarding identified impacts, and if necessary, adopt a Statement of Overriding Considerations regarding these impacts. SGPWA and SBVMWD, which would fund construction of the East Branch Extension Phase II project, also have discretionary authority over the proposed project, and are therefore Responsible Agencies.

DWR would also use the analysis contained within this EIR to support the acquisition of the following regulatory permits or approvals if needed:

- United States Army Corps of Engineers: 404 Clean Water Act;
- United States Fish and Wildlife Service: Endangered Species Act – Section 7 Consultation incidental take permit;
- California Department of Fish and Game: 1602 Streambed Alteration Agreement, California Endangered Species Act;
- California Department of Fish and Game: 2081/80 incidental take permit;
- Regional Water Quality Control Board: 401 Water Quality Certification;
- Regional Water Quality Control Board: Storm Water Pollution Prevention Plan;
- San Bernardino Valley Water Conservation District: Easement;
- San Bernardino County Flood Control District: Easement;
- County of San Bernardino: Roadway Encroachment Permit;
- Woollystar Preservation Area Oversight Committee: Easement;
- City of Redlands: Easement;
- Redlands Municipal Airport: Airport Land Use Commission approval;
- Metropolitan Water District of Southern California: Consent to common use agreement, and
- City of Highland: Roadway Encroachment Permit.

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CHAPTER 3

Environmental Setting, Impacts, and Mitigation Measures

In compliance with Section 15126 of the *CEQA Guidelines*, **Chapter 3** provides an analysis of the environmental effects of the State Water Project's East Branch Extension Phase II (proposed project). The project impacts are assessed against the existing baseline condition. The following environmental issue areas are assessed in this chapter:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Geology, Soils, Seismicity, and Mineral Resources
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use, Planning, and Recreation
- Noise and Vibration
- Public Safety and Utilities
- Transportation and Traffic

Each environmental issue area includes the following subsections:

- Regulatory Framework
- Environmental Setting
- Impacts and Mitigation Measures

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3.1 Aesthetics

This section addresses the aesthetic and visual quality of the region and local project area. It includes a description of existing visual conditions and an evaluation of potential effects on visual resources and public view corridors.

3.1.1 Regulatory Framework

3.1.1.1 State

State Scenic Highway Program

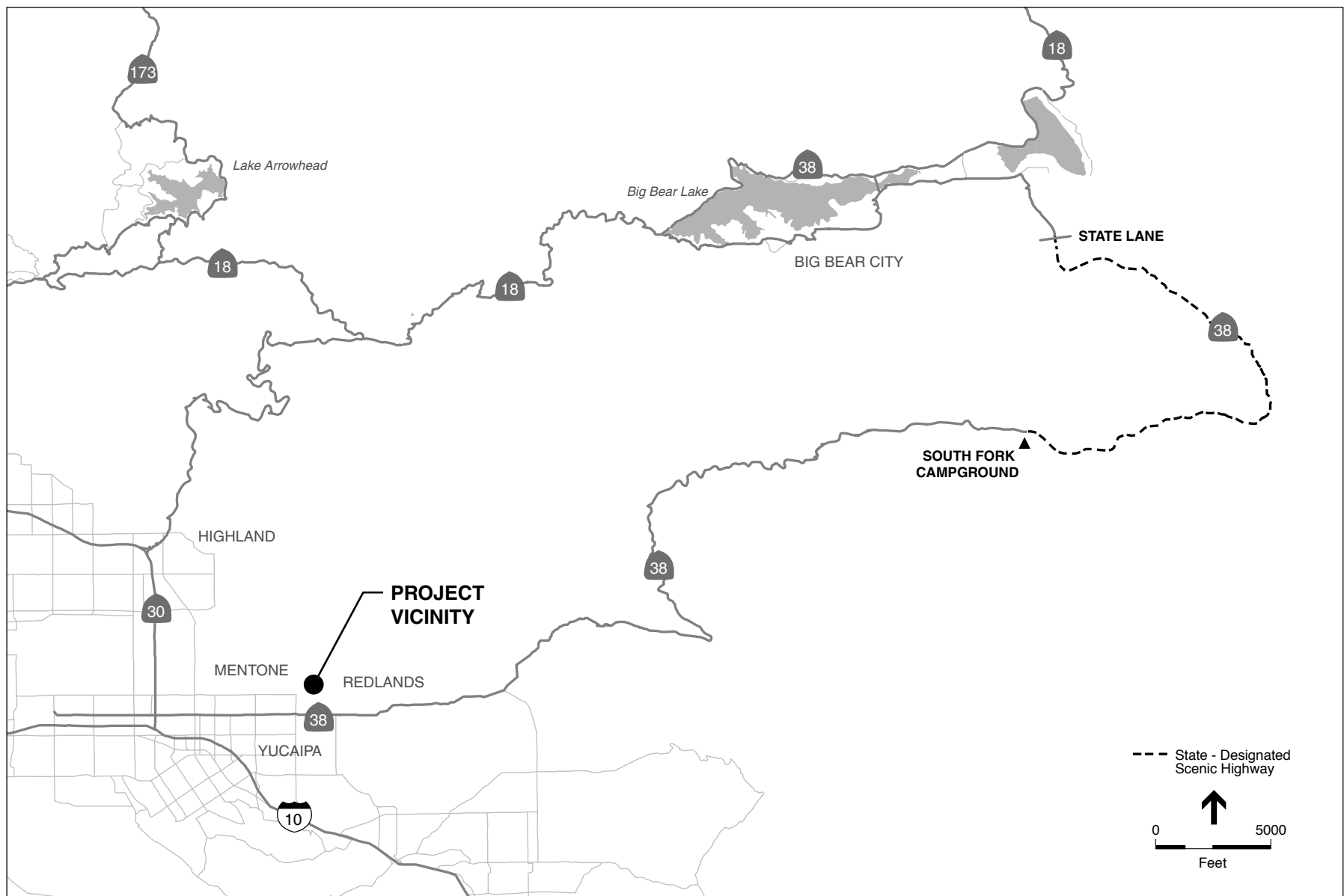
The State Scenic Highway Program, created by the California Legislature in 1963, was established to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways. A highway is designated under this program when a local jurisdiction adopts a scenic corridor protection program, applies to the California Department of Transportation (Caltrans) for scenic highway approval, and receives notification from Caltrans that the highway has been designated as a Scenic Highway. When a city or county nominates an eligible scenic highway for official designation, it defines the scenic corridor, which is land generally adjacent to and visible to a motorist on the highway. There is only one state scenic highway designation in San Bernardino County; a portion of SR 38 is an officially-designated state scenic highway. Mill Creek Road becomes SR 38 as it crosses the San Bernardino Mountains east of the Crafton Hills Pump Station. SR 38 is approximately 49 miles long, starting in the community of Mentone and ending at Big Bear City, the final 16 miles of which are an officially designated state scenic highway. The portion designated as a State Scenic Highway is well outside of the project area as shown on **Figure 3.1-1**.

3.1.1.2 Local

The County of San Bernardino has designated various “Scenic Routes” within the County. County designated Scenic Routes are roadways that have scenic vistas and other scenic and aesthetic qualities that over time have been found to add beauty to the area. The following routes have been designated as scenic within the Valley Region (nearest the project site) of the County.

Valley Region

- Citrus Avenue within the Redlands sphere of influence (SOI).
- Colton Avenue within the Redlands SOI.
- Crafton Avenue within the Redlands SOI.
- Fifth Avenue within the Redlands SOI.
- Highland Avenue within the Redlands SOI.
- I-10 from the City of Redlands to the City of Yucaipa.
- Mentone Boulevard within the Redlands SOI.
- San Bernardino Avenue within the Redlands SOI.
- Sand Canyon Road between Crafton Avenue and the City of Yucaipa.



SOURCE: State of California; ESA, 2007.

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Figure 3.1-1
Nearest State - Designated
Scenic Corridor

San Bernardino Avenue is the nearest County designated Scenic Route which would afford views of the proposed project site.

3.1.2 Setting

3.1.2.1 Regional Setting

San Bernardino County is divided into three distinct regions including the western valley region, the mountains, and the high desert. The proposed project would take place within the valley region at the foot of the San Bernardino Mountains. The visual character of the project vicinity is shaped by the juxtaposition of the urbanized and rural development in the valley with the Santa Ana River Wash and its tributaries and the steep slopes of the San Bernardino Mountains. While the valley is mostly urban, the communities of Redlands, Highland, and Mentone retain a rural character by the intermixing of residential, commercial, agricultural, and open space land use designations. Land designated as open space and undeveloped natural areas are prominent throughout the project vicinity. These undeveloped areas generally consist of chaparral, coastal sage scrub, deciduous woodlands and grasslands.

Prominent natural features that can be seen from the project vicinity include the San Bernardino Mountains and the Crafton Hills. Built features in the project vicinity include the San Bernardino Valley Municipal Water District Foothill Pump Station, the Metropolitan Water District Inland Feeder pipeline easement with above ground structures, the Redlands Municipal Airport, residential housing, commercial buildings, and orchards.

3.1.2.2 Project Area Setting

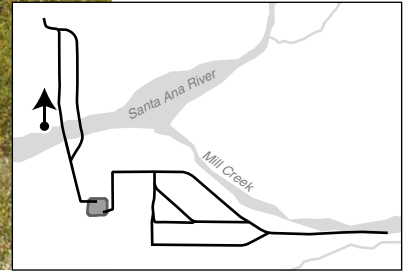
Pipeline Alignments

The proposed pipeline alignments would be located near residential and commercial properties, the Redlands Municipal Airport, agricultural land, percolation ponds and undeveloped areas. All proposed pipeline alignments would cross the Santa Ana River and run parallel to Mill Creek at their eastern end. The pipeline would parallel the existing Metropolitan Water District's Inland Feeder pipeline as it crossed the river. **Figure 3.1-2** provides photos of the existing Inland Feeder pipeline corridor as it traverses the Santa Ana River wash. Pipeline Alternative Alignment 2 would run through a portion of a County-designated scenic route on Crafton Avenue.

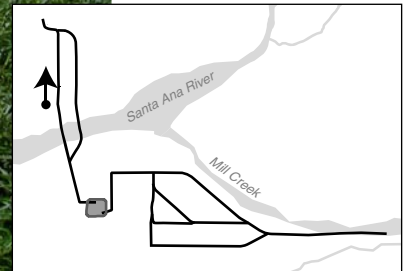
Figure 3.1-3 provides photos of an entrance to the existing orchard and views looking south along Crafton Avenue. The pipelines would be laid underground and would not be visible after the construction is complete.

Citrus Reservoir and Citrus Pump Station

The Citrus Reservoir and Citrus Pump Station would be constructed on an existing citrus orchard north of San Bernardino Avenue, a county designated scenic route. The proposed reservoir would have an approximate six foot high embankment above the average ground surface around the perimeter. The pump station would be a single story building within the orchard shielded on three sides by

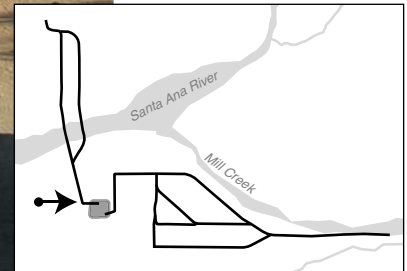


Inland feeder pipeline and Santa Ana River crossing

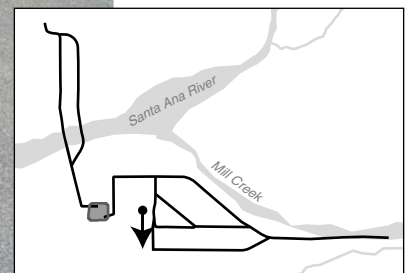


Inland feeder pipeline crossing

➔ Photo Point



Entry way to Citrus Reservoir and Pump Station



Looking south along Crafton Avenue

➔ Photo Point

the remaining citrus trees as well as being constructed below the existing grade. Views from San Bernardino Avenue would remain generally the same, as at least four rows of citrus trees would be maintained adjacent to the roadways. Power would be supplied to the Citrus Pump Station via a Southern California Edison (SCE) 115 kilovolt (kV) transmission line. The power supply line would connect to an external switch yard that would be located adjacent to the pump station. Power poles would be approximately 80 feet tall to match the height of the existing poles on San Bernardino Avenue. The switch yard and pump station would be constructed below the existing orchard surface elevation. Due to the depth below grade of the foundations and to the rows of conserved citrus trees along San Bernardino and Opal Avenues, the structures may be partially or fully screened from the adjacent public roadways. **Figure 3.1-4** shows views looking north across the Lockheed property and a view looking west from the proposed reservoir towards the airport.

Crafton Hills Pump Station Expansion and Cherry Valley Pump Station

Additional pumps would be added to the expanded Crafton Hills Pump Station located north of Mill Creek Road. Mill Creek road parallels Mill Creek. A flood protection levee has been constructed along Mill Creek to the Santa Ana River. **Figure 3.1-5** shows the Mill Creek levee and a view of the Santa Ana River near the project site. Mill Creek is located north of the pump station. Views to the south of the pump station are dominated by residential development. Views to the west are dominated by the Mill Creek drainage channel and percolation ponds. Views to the east of the pump station are similar to views looking north; consisting of the Mill Creek channel and undeveloped land. Crafton Hills Pump Station is visible from Mill Creek Road. This portion of SR 38 does not have a scenic corridor designation.

All of the Cherry Valley Pump Station improvements would occur within the existing building. No aesthetic impacts would result.

3.1.3 Impact Assessment

The proposed project's potential impacts were assessed using the *CEQA Guidelines* Appendix G Checklist. The following sections discuss the key issue areas identified in the *CEQA Guidelines* with respect to the project's potential effect to aesthetic resources. Significance thresholds are identified and a significance conclusion is made following the discussion.

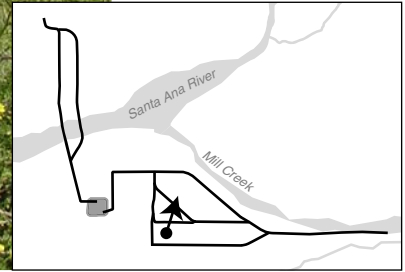
3.1.3.1 Scenic Vistas

This section discusses the following CEQA Checklist question:

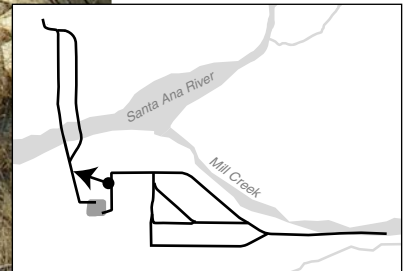
Would the project have a substantial adverse effect on a scenic vista?

Significance Threshold

The proposed project would have a significant impact if the construction of the proposed project would result in substantial adverse impacts on a scenic vista. For the purposes of this analysis a scenic vista is designated as a long range view.



Lockheed Missile Site



Looking northwest from Citrus Reservoir towards Redlands Municipal Airport

➔ Photo Point

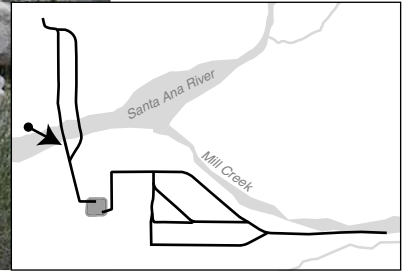
SOURCE: ESA, 2007

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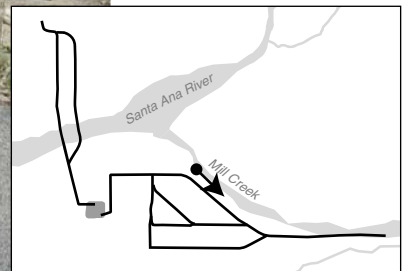
Figure 3.1-4
Site Photos



Santa Ana River



Mill Creek Levee



➔ Photo Point

SOURCE: ESA, 2007

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Figure 3.1-5
Site Photos

Additionally, this analysis defines a substantial adverse effect as an effect that has a high degree of visual contrast with the existing objects and patterns on the site and or results in physical changes that may impair the quality of important views, including changes in scale, form, color and texture of natural features existing on the site. Such changes could result from new structures, grading and excavation, landscaping, or elimination of existing vegetation.

Impact Analysis

As described above, SR 38 is an officially designated Scenic Highway under the State Scenic Highway Program within portions of the San Bernardino National Forest. Crafton Avenue and San Bernardino Avenue are officially designated county scenic routes, under the County General Plan.

The proposed project would not be visible from the segment of SR 38 that is officially designated by the state of California. Therefore, the construction and operational phases of the proposed project would not have an impact on a state-designated Scenic Route.

Construction activities would be visible from portions of Crafton Avenue and San Bernardino Avenue, both of which are County-designated Scenic Routes. The County defines Scenic Routes as roadways that have scenic vistas and other scenic and aesthetic qualities that over time have been found to add beauty to the area. Vistas of the Santa Ana wash with the mountains in the distance can be seen from Crafton Avenue and San Bernardino Avenue within the project area. During construction, these vistas would be affected by the presence of construction equipment and stockpiled materials. These impacts to local views would only occur during construction and would not constitute a significant adverse impact to the character of the vista.

Once constructed the Citrus Reservoir, Citrus Pump Station, and switch yard would not be readily visible from San Bernardino Avenue as the pump station and switch yard would be constructed below the existing surface elevation. The views would be shielded by topography as the facilities would essentially be built below grade. However, the existing elevation of San Bernardino Avenue, near Opal Avenue, is similar to the proposed foundation elevation and the topography would not fully shield the facilities. In spite of this, views of the facilities would be softened by the remaining rows of citrus trees left along Opal and San Bernardino Avenues. The vista across the river wash with the mountains in the background would not be significantly affected by the buried pipeline, reservoir, pump station or switch yard.

The expanded Crafton Hills Pump Station would be visible from Mill Creek Road. The expansion of the existing structure would not significantly alter the scenic vistas of the natural landscape since the parcel is already developed. Impacts to scenic vistas would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. Impacts would be less than significant because construction areas would be returned to pre-construction conditions. Once constructed, the proposed facilities would not result in substantial adverse impacts. All piping would be underground and not visible, the Citrus Reservoir and Citrus Pump Station would be shielded by topography and the remaining rows of citrus trees. The expansion of existing pump stations would not cause substantial changes to scenic vistas.

3.1.3.2 Scenic Resources

This section discusses the following CEQA Checklist question:

Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Significance Threshold

The project would have a significant impact if the project would result in the removal or damage to scenic resources such as trees, rock outcroppings, and historic buildings within a state scenic highway.

Impact Analysis

The proposed project would not be visible from the segment of SR 38 that is officially designated as a State Scenic Highway. Therefore, the proposed project would not have an impact on a state-designated Scenic Route. Additionally, the project area does not contain significant scenic resources such as rock outcroppings or historic buildings that would be adversely impacted by project implementation. Citrus trees removed for the storage reservoir would be within the center of the orchard, leaving exterior rows to act as a visual screen. There would be no impact to scenic resources within a state scenic highway.

Mitigation Measures

None required.

Significance Conclusion

There would be no impact. The proposed project would not damage scenic resources within a state scenic highway as the project would not be visible from any state scenic highways nor does the project area contain any significant scenic resources.

3.1.3.3 Visual Character

This section discusses the following CEQA Checklist question:

Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Significance Threshold

A significant impact would result if the proposed project were to substantially degrade the visual quality and character of the site and its surroundings. For the purpose of this analysis, “substantially degrading the existing visual character of the site” would occur if the project resulted in a high degree of visual contrast with the existing objects and patterns on the site and or results in physical changes that may impair the quality of important views. Physical changes include changes in scale, form, color and texture of natural features existing on the site. Such changes could result from new structures, grading and excavation, landscaping, or elimination of existing vegetation.

Impact Analysis

Pipeline Alignments

Pipeline construction would impact the visual character in the project corridor during the construction activities. During construction, excavated trenches and stockpiled soils, pipe, and other materials within the construction easement would constitute negative aesthetic elements in the visual landscape that would directly affect the area. This impact would occur during the two-year pipeline construction period and would not be considered permanent. However, construction of the pipelines would remove native vegetation along each of the alignments. The cleared area within the construction zone in undeveloped areas would be visible from views in close proximity for several years. Natural habitats in this desert region re-establish themselves slowly. Mature vegetation would take many years to return to pre-construction conditions. Following construction, a vegetation restoration plan would be implemented to re-establish habitat removed during construction. Implementation of mitigation measures (identified in section 3.3 Biological Resources) requiring the implementation and monitoring of a restoration plan would result in the rejuvenation of the natural character within the construction zone. As a result, long-term impacts to local aesthetics would be less than significant.

A portion of the proposed pipeline within Alternative Alignment 2 would run along Crafton Avenue and Madeira Avenue. The aesthetic character of the county-designated scenic route in Crafton Avenue would be temporarily affected during construction. See Figure 3.1-3 for a photo taken along Crafton Avenue. As part of the project, affected city streets would return to their original condition once the project is complete (See section 3.11 Transportation). Thus, there would be no long-term negative effects on the county-designated roadways.

Citrus Reservoir and Citrus Pump Station

Construction of the Citrus Reservoir and Citrus Pump Station would result in visual impacts during the three-year construction period. Construction activities would remove portions of a citrus orchard and require the use of heavy equipment and storage of materials at the construction zone. During construction, excavation equipment, stockpiled soils, soil screening devices, and other materials within the construction easement would affect the character of the area. Citrus trees would be removed to accommodate the Citrus Reservoir and Citrus Pump Station. These trees may be chipped on site and hauled off site for sale as landscape mulch. The tree removal would change the visual character of the site. Mitigation described below would ensure that a visual screen of citrus trees be maintained to minimize the project's long-term impact on the visual character of the area. Therefore, impacts would be less than significant.

Operation of the reservoir would include operation of an approximately 30-foot tall, single-story, pump station adjacent to the Citrus Reservoir within the citrus orchard. The structure would be constructed of concrete block with a sloped roof, similar to the existing Crafton Hills Pump Station. The citrus orchard currently slopes down from the east to the west. The ground surface elevation near the intersection of San Bernardino Avenue and Opal Avenue is about 1,640 feet amsl. The existing elevation of the ground on the eastern edge of the proposed reservoir is currently about 1,680 feet amsl (40 feet higher than the western edge of the reservoir. The reservoir and pump station site would be graded to be level with the western edge of the project site (1,640 amsl), resulting in a 40-foot cut on the eastern and southeastern edges of the construction zone (see Figure 2-8). As described in Chapter 2, a large amount of material would be excavated from this site to accommodate the reservoir and pump station. The top of the proposed 30-foot tall pump station may not be visible from most westbound viewing angles along San Bernardino Avenue. If the pump station is located on the west side of the reservoir, it would be visible from eastbound San Bernardino Avenue near Opal Avenue because the existing ground elevation is similar to the proposed foundation elevation. With implementation of the mitigation measure below, views of the pump station and reservoir would be softened by rows of citrus trees along San Bernardino and Opal Avenue that would serve as a visual screen.

The architecture of the pump station would be similar to the existing Crafton Hills Pump Station that is situated within a residential segment of Mill Creek Road. The facility is consistent with the low-density urban character of the area. The new reservoir and pump station would be similarly compatible with the residential development in the City of Redlands located across San Bernardino Avenue.

Crafton Hills and Cherry Valley Pump Station Expansion

Expansion of the Crafton Hills Pump Station would result in visual impacts during the two-year construction period. Construction activities would require the use of heavy equipment and storage of materials at the construction zone which would constitute negative aesthetic elements in the visual landscape that would directly affect the area. However these effects would only occur during project construction. The visual character of the site and surroundings would not be substantially degraded in the long-term by the additions made to the pump station.

Improvements to the existing Cherry Valley Pump Station would occur within the building. No exterior modifications would be made to the building. No aesthetic impacts would result.

Mitigation Measures

AES-1: DWR shall ensure that citrus trees are left in place between the reservoir and adjacent streets and maintained as a visual screen of the Citrus Reservoir and Citrus Pump Station from views on San Bernardino Avenue and Opal Avenue. At least four rows of citrus trees shall be maintained between the roadways and the project components. Trees removed during construction in this visual screen area shall be replaced.

Significance Conclusion

Less than significant with mitigation. Impacts due to construction activities would be temporary and would not result in long-term changes to the visual character of the sites. Implementation of Mitigation Measure AES-1 would reduce visual impacts caused by the Citrus Reservoir and Citrus Pump Station to a less-than-significant level by requiring a visual screen that would soften views of the proposed facilities.

3.1.3.4 Light and Glare

This section discusses the following CEQA Checklist question:

Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views of the area?

Significance Threshold

A significant impact would result if the project resulted in new or altered sources of light and or glare which would affect the navigation of aircrafts approaching and or leaving the Redlands airport. A significant impact would also result if new sources of light disrupted nearby nighttime views.

Impact Analysis

Pipeline Alignments

Exterior lighting along the pipeline alignments during the construction period could be used if nighttime construction occurs. Night construction may occur during the pipe installation across the Santa Ana River and while within the Redlands Municipal Airport's safety zone. Night construction would reduce the duration of equipment within the air safety zone and reduce the amount of time equipment could interfere with water releases from the upstream Seven Oaks Dam. In order to minimize impacts during construction, DWR shall ensure that all exterior nighttime lighting is shielded and directed downward. Implementation of the mitigation measures below would ensure that excessive light and glare did not affect neighboring land uses. Nonetheless, even with the implementation of the mitigation measure identified below, nighttime

construction would introduce new sources of light that could affect the airport and sensitive receptors. Night construction would be a significant and unavoidable impact to the ambient nighttime light.

Citrus Reservoir and Citrus Pump Station

Exterior lighting at the Citrus Reservoir and Citrus Pump Station would introduce a new light source that could impact nighttime views. The lighting fixtures would be used for security purposes. This lighting could possibly be visible from surrounding residences. Due to the proposed location of the pump station, shielded by the excavated slope and the preservation of citrus trees along Opal and San Bernardino Avenues, the light would be shielded by topography and vegetation, therefore this new source of light would not constitute a significant impact. Nonetheless, mitigation measures below would be required to ensure the new sources of lighting are shielded, resulting in a less-than-significant impact.

Crafton Hills Pump Station Expansion

Light sources already exist at the Crafton Hills Pump Station and the introduction of new light sources would not substantially increase ambient light in the area. Lighting would be used for security purposes and would not significantly impact neighboring land uses. Nonetheless, mitigation measures below would be required to ensure the new sources of lighting are shielded, resulting in a less-than-significant impact.

Mitigation Measures

AES-2: DWR shall ensure that lighting used for nighttime construction is shielded and directed downward to minimize impacts to neighboring residential areas. The construction contractor shall submit a nighttime lighting plan to DWR for review and approval.

AES-3: DWR shall ensure that all exterior lighting is shielded and directed downward to minimize impacts to neighboring residential areas. If necessary to reduce light casting, landscaping shall be provided around proposed facilities. The vegetation shall be selected, placed and maintained to minimize off-site light and glare onto surrounding areas. In addition, highly reflective building materials and/or finishes shall not be used in the design for proposed structures.

Significance Conclusion

Significant and unavoidable. Though implementation of Mitigation Measure AES-2 would reduce impacts by requiring a nighttime lighting plan impacts would be significant and unavoidable because nighttime construction would introduce new sources of light that could affect the airport and sensitive receptors. Other light and glare impacts would be less than significant with mitigation. Implementation of Mitigation Measure AES-3 would reduce impacts by ensuring that all exterior lighting is shielded and directed downward to minimize impacts to nearby areas.

3.1.3.5 Mitigation Measure Summary Table

Table 3.1-1 presents the impacts and mitigation summary for Aesthetic Resources.

**TABLE 3.1-1
IMPACTS AND MITIGATION SUMMARY**

Proposed Project Impact	Mitigation Measure	Significance after Mitigation
Scenic Vistas: The proposed project would have a less- than-significant impact on scenic vistas.	None required	Less than significant
Scenic Resources: The proposed project would have no impact on resources within a state scenic highway.	None required	No Impact
Visual Character: The proposed project would have a less- than-significant impact on the visual character of the surrounding areas with incorporation of mitigation measures.	AES-1	Less than significant
Light and Glare: The proposed project would have both significant and unavoidable and less-than-significant impacts regarding light and glare.	AES-2 and AES-3	Night construction would be a significant and unavoidable impact. Other light and glare impacts would be less than significant with mitigation.

Intentionally left blank.

3.2 Air Quality

This section provides an overview of the regulatory framework, existing air quality at the proposed project site and surrounding region, an analysis of potential impacts to air quality that would result from implementation of the project, and identification of mitigation measures.

3.2.1 Regulatory Framework

3.2.1.1 Federal Regulations

The Federal Clean Air Act (FCAA) requires the U.S. Environmental Protection Agency (USEPA) to identify National Ambient Air Quality Standards (NAAQS or national standards) to protect public health and welfare. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter less than 10 and 2.5 microns in diameter (PM₁₀ and PM_{2.5}), and lead. **Table 3.2-1** shows current national and state ambient air quality standards and provides a brief discussion of the related health effects and principal sources for each pollutant.

Pursuant to the 1990 Federal Clean Air Act Amendments (FCAAA), the USEPA classifies air basins (or portions thereof) as “attainment” or “nonattainment” for each criteria air pollutants, based on whether or not the NAAQS had been achieved. **Table 3.2-2** shows the current attainment status of the project area.

The FCAA requires each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The FCAA added requirements for states containing areas that violate the NAAQS to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The USEPA has responsibility to review all state SIPs to determine if they conform to the mandates of the FCAAA and will achieve air quality goals when implemented. If the USEPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the nonattainment area and may impose additional control measures. Failure to submit an approvable SIP or to implement the plan within mandated timeframes can result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

Criteria Air Pollutants

The following is a discussion of air pollutants regulated in the FCAA.

Ozone

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

**TABLE 3.2-1
STATE AND NATIONAL CRITERIA AIR POLLUTANT STANDARDS, EFFECTS, AND SOURCES**

Pollutant	Averaging Time	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	1 hour	0.09 ppm	---	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when reactive organic gases (ROG) and nitrogen oxides (NO _x) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
	8 hours	0.07 ppm ¹	0.08 ppm		
Carbon Monoxide	1 hour	20 ppm	35 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm		
Nitrogen Dioxide	1 hour	0.18 ppm	---	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
	Annual Avg.	0.030 ppm	0.053 ppm		
Sulfur Dioxide	1 hour	0.25 ppm	---	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	3 hours	---	0.5 ppm		
	24 hours	0.04 ppm	0.14 ppm		
	Annual Avg.	---	0.03 ppm		
Respirable Particulate Matter (PM-10)	24 hours	50 µg/m ³	150 µg/m ³	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	Annual Avg.	20 µg/m ³	---		
Fine Particulate Matter (PM-2.5)	24 hours	---	35 µg/m ³	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NO _x , sulfur oxides, and organics.
	Annual Avg.	12 µg/m ³	15 µg/m ³		
Lead	Monthly Ave.	1.5 µg/m ³	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction.	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 µg/m ³		
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Geothermal Power Plants, Petroleum Production and refining	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations)
Sulfates	24 hour	25 µg/m ³	No National Standard	Produced by the reaction in the air of SO ₂ .	Breathing difficulties, aggravates asthma, reduced visibility
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	No National Standard	Reduces visibility, reduced airport safety, lower real estate value, and discourages tourism.	See PM2.5.

NOTE: ppm = parts per million; µg/m³ = micrograms per cubic meter.

¹ This concentration was approved by the Air Resources Board on April 28, 2005 and became effective May 17, 2006.

SOURCE: California Air Resources Board, 2007a. *Ambient Air Quality Standards*, available at <http://www.arb.ca.gov/aqs/aaqs2.pdf>; California Air Resources Board, 2001. *ARB Fact Sheet: Air Pollution Sources, Effects and Control*, <http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm>, page last updated December 2005.

**TABLE 3.2-2
SAN BERNARDINO ATTAINMENT STATUS**

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone – one hour	No Federal Standard ¹	Nonattainment
Ozone – eight hour	Severe -17	Unclassified
PM ₁₀	Serious	Nonattainment
PM _{2.5}	Nonattainment	Nonattainment
CO	Nonattainment	Attainment
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	No Designation	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility-Reducing Particles	No Federal Standard	Unclassified

¹ Federal One Hour Ozone National Ambient Air Quality Standard was revoked on June 15, 2005

SOURCE: California Air Resources Board, 2007b. *Area Designation Maps*, <http://www.arb.ca.gov/desig/adm/adm.htm>, page updated June 28, 2007.

Ozone, the main component of photochemical smog, is primarily a summer and fall pollution problem. Ozone is not emitted directly into the air but is formed through a complex series of chemical reactions involving other compounds that are directly emitted. These directly emitted pollutants (also known as ozone precursors) include ROG and NO_x. The time period required for ozone formation allows the reacting compounds to spread over a large area, producing a regional pollution problem. Ozone problems are the cumulative result of regional development patterns rather than the result of a few significant emission sources.

Once formed, ozone remains in the atmosphere for one or two days. Ozone is then eliminated through reaction with chemicals on the leaves of plants, attachment to water droplets as they fall to earth (“rainout”) and absorption by water molecules in clouds that later fall to earth with rain (“washout”).

Carbon Monoxide

Ambient carbon monoxide concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence carbon monoxide concentrations. Under inversion conditions, carbon monoxide concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources.

When inhaled at high concentrations, carbon monoxide combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

Carbon monoxide concentrations have declined dramatically in California due to existing controls and programs. Carbon monoxide concentrations are expected to continue declining due to the ongoing retirement of older, more polluting vehicles from the mix of vehicles on the road network.

Respirable Particulate Matter

PM₁₀ and PM_{2.5} consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. (A micron is one-millionth of a meter). PM₁₀ and PM_{2.5} represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis and respiratory illnesses in children. Recent mortality studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Particulates can also damage materials and reduce visibility. One common source of PM_{2.5} is diesel particulate emissions.

Traffic generates particulate matter and PM₁₀ emissions through entrainment of dust and dirt particles that settle onto roadways and parking lots. PM₁₀ is also emitted by burning wood in residential wood stoves and fireplaces and open agricultural burning. PM₁₀ can remain in the atmosphere for up to seven days before gravitational settling, rainout and washout remove it.

Nitrogen Dioxide

NO₂ is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO₂. Aside from its contribution to ozone formation, nitrogen dioxide can increase the risk of acute and chronic respiratory disease and reduce visibility. NO₂ may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Hazardous Air Pollutants

At the federal level, non-criteria air pollutants capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness) are referred to as Hazardous Air Pollutants (HAPs). All HAPs are listed in the Clean Air Act, section 112(b). California refers to these same air pollutants as Toxic Air Contaminants (TACs). In 1993, California Assembly Bill (AB) 2728 was passed and AB 2728 requires the California Air Resources Board (CARB) to identify any substance listed as a federal HAP as a TAC in California. Therefore, HAPs are a subset of TACs in California.

Odorous Emissions

Though offensive odors from stationary sources rarely cause any physical harm, they still remain unpleasant and can lead to public distress generating citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

Greenhouse Gases

Gases that trap heat in the atmosphere are called greenhouse gases. The major concern is that increases in greenhouse gases are causing Global Climate Change. Global Climate Change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation and temperature. Although there is tremendous disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, most agree that there is a direct link between increased emission of so-called greenhouse gases and long-term global temperature. What greenhouse gases have in common is that they allow sunlight to enter the atmosphere, but trap a portion of the outward-bound infrared radiation and warm up the air. The process is similar to the effect greenhouses have in raising the internal temperature, hence the name greenhouse gases. Both natural processes and human activities emit greenhouse gases. The accumulation of greenhouse gases in the atmosphere regulates the earth's temperature; however, emissions from human activities such as electricity production and motor vehicles have elevated the concentration of greenhouse gases in the atmosphere. This accumulation of greenhouse gases has contributed to an increase in the temperature of the earth's atmosphere and contributed to Global Climate Change. The principal greenhouse gases are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and water vapor (H₂O). Carbon dioxide is the reference gas for climate change because it gets the most attention and is considered the most important greenhouse gas. To account for the warming potential of greenhouse gases, greenhouse gas emissions are often quantified and reported as CO₂ equivalents (CO₂e). HFCs are used in refrigeration systems as substitutes for CFCs, which were banned for destroying the ozone layer.

3.2.1.2 State Regulations

California has adopted ambient standards that are more stringent than the federal standards for the criteria air pollutants. These are shown in Table 3.2-1. Under the California Clean Air Act (CCAA) patterned after the FCAA, areas have been designated as attainment or nonattainment with respect to the state standards. Table 3.2-2 summarizes the attainment status with California standards in the project area.

The CARB manages air quality, regulates mobile emissions sources, and oversees the activities of county Air Pollution Control Districts and regional Air Quality Management Districts. CARB establishes state ambient air quality standards and vehicle emissions standards.

Toxic Air Contaminants

California State law defines TACs as air pollutants that may cause or contribute to increases in serious illness or death, or that may pose a present or potential hazard to human health. A total of 243 substances have been designated as TACs under California law; they include the 189 (federal) HAPs adopted in accordance with AB 2728. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources but AB 2588 does not regulate air toxics emissions. Toxic air contaminant emissions from individual facilities are quantified and prioritized. Depending on the risk levels, emitting facilities are required to implement varying levels of risk reduction measures. The proposed project does not include

developing facilities that may be categorized as “High-priority,” which are required to perform a health risk assessment.

In August of 1998, CARB identified particulate emissions from diesel-fueled engines (diesel particulate matter, or DPM) as TACs. CARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (CARB, 2000). The document represents a proposal to reduce diesel particulate emissions, with the goal to reduce emissions and the associated health risk by 75 percent in 2010 and by 85 percent in 2020. The program aims to require the use of state-of-the-art catalyzed diesel particulate filters and ultra low sulfur diesel fuel on diesel-fueled engines. Ambient exposures to diesel particulates in California are significant fractions of total TAC levels in the State.

CARB recently published the *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB, 2005). The primary goal in developing the handbook was to provide information that will help keep California’s children and other vulnerable populations out of harm’s way with respect to nearby sources of air pollution. The handbook highlights recent studies that have shown that public exposure to air pollution can be substantially elevated near freeways and certain other facilities. However, the health risk is greatly reduced with distance. For that reason, CARB provided some general recommendations aimed at keeping appropriate distances between sources of air pollution and sensitive land uses, such as residences.

Greenhouse Gases

In 2005, in recognition of California’s vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of greenhouse gas would be progressively reduced, as follows:

- By 2010, reduce greenhouse gas emissions to 2000 levels;
- By 2020, reduce greenhouse gas emissions to 1990 levels; and
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), which requires the CARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide greenhouse gas emissions are reduced to 1990 levels by 2020 (representing an approximate 25 percent reduction in emissions).

In June 2007 CARB directed staff to pursue 37 early actions for reducing greenhouse gas emissions under the California Global Warming Solutions Act of 2006 (AB 32). The broad spectrum of strategies to be developed – including a Low Carbon Fuel Standard, regulations for refrigerants with high global warming potentials, guidance and protocols for local governments to facilitate greenhouse gas reductions, and green ports – reflects that the serious threat of climate change requires action as soon as possible (CARB, 2007c).

In addition to approving the 37 greenhouse gas reduction strategies, CARB directed staff to further evaluate early action recommendations made at the June 2007 meeting, and to report back

to CARB within six months. The general sentiment of CARB suggested a desire to try to pursue greater greenhouse gas emissions reductions in California in the near-term. Since the June 2007 CARB hearing, CARB staff has evaluated all 48 recommendations submitted by several stakeholder and several internally-generated staff ideas and published the *Draft List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration* in September 2007 (CARB, 2007c). Based on its additional analysis, CARB staff is recommending the expansion of the early action list to a total of 44 measures.

The 2020 target reductions are currently estimated to be 174 million metric tons per year of CO₂e. In total, the 44 recommended early actions have the potential to reduce greenhouse gas emissions by at least 42 million metric tons per year of carbon dioxide CO₂e emissions by 2020, representing about 25% of the estimated reductions needed by 2020. CARB staff is working on 1990 and 2020 greenhouse gas emission inventories in order to refine the projected reductions needed by 2020 and expects to present its recommendations to the CARB by the end of 2007. The 44 measures are in the sectors of fuels, transportation, forestry, agriculture, education, energy efficiency, commercial, solid waste, cement, oil and gas, electricity, and fire suppression.

Table 3.2-3 shows the list of the 44 recommendations.

In addition to identifying early actions to reduce greenhouse gases, the CARB is also developing the greenhouse gas mandatory reporting regulation that is required by January 1, 2008 pursuant to requirements of AB32. The regulations are expected to require reporting for certain types of facilities that make up the bulk of the stationary source emissions in California. Currently, the draft regulation language identifies major facilities as those that generate more than 25,000 metric tons of CO₂ per year (CO₂/yr). This reporting limit is consistent with European Union reporting. Cement plants, oil refineries, electric generating facilities/providers, co-generation facilities, and hydrogen plants and other stationary combustion sources that emit more than 25,000 MT CO₂/yr, make up 94 percent of the point source CO₂ emissions in California (CARB, 2007d).

3.2.1.4 Local Regulations

Regional Comprehensive Plan and Guide

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties and addresses regional issues relating to transportation, the economy, community development, and the environment. SCAG is the federally designated metropolitan planning organization (MPO) for the majority of the southern California region and is the largest MPO in the nation. As the designated MPO, SCAG is mandated by the federal government to develop and implement regional plans that address transportation, growth management, hazardous waste management, and air quality issues. With respect to air quality planning, SCAG has prepared the Regional Comprehensive Plan and Guide (RCPG) for the San Bernardino County region, which includes Growth Management and Regional Mobility chapters that form the basis for the land use and transportation components of the Air Quality Management Plan (AQMP) and are utilized in the preparation of air quality forecasts and the consistency analysis that is included in the AQMP.

**TABLE 3.2-3
RECOMMENDED AB32 GREENHOUSE GAS MEASURES TO BE INITIATED BY CARB
BETWEEN 2007 AND 2012 (CARB, 2007C)**

ID #	Sector	Strategy Name
1	Fuels	Above Ground Storage Tanks
2	Transportation	Diesel – Off-road equipment (non-agricultural)
3	Forestry	Forestry protocol endorsement
4	Transportation	Diesel – Port trucks
5	Transportation	Diesel – Vessel main engine fuel specifications
6	Transportation	Diesel – Commercial harbor craft
7	Transportation	Green ports
8	Agriculture	Manure management (methane digester protocol)
9	Education	Local gov. Greenhouse Gas (GHG) reduction guidance / protocols
10	Education	Business GHG reduction guidance / protocols
11	Energy Efficiency	Cool communities program
12	Commercial	Reduce high Global Warming Potential (GWP) GHGs in products
13	Commercial	Reduction of PFCs from semiconductor industry
14	Transportation	SmartWay truck efficiency
15	Transportation	Low Carbon Fuel Standard (LCFS)
16	Transportation	Reduction of HFC-134a from DIY Motor Vehicle AC servicing
17	Waste	Improved landfill gas capture
18	Fuels	Gasoline disperser hose replacement
19	Fuels	Portable outboard marine tanks
20	Transportation	Standards for off-cycle driving conditions
21	Transportation	Diesel – Privately owned on-road trucks
22	Transportation	Anti-idling enforcement
23	Commercial	SF ₆ reductions from the non-electric sector
24	Transportation	Tire inflation program
25	Transportation	Cool automobile paints
26	Cement	Cement (A): Blended cements
27	Cement	Cement (B): Energy efficiency of California cement facilities
28	Transportation	Ban on HFC release from Motor Vehicle AC service / dismantling
29	Transportation	Diesel – off-road equipment (agricultural)
30	Transportation	Add AC leak tightness test and repair to Smog Check
31	Agriculture	Research on GHG reductions from nitrogen land applications
32	Commercial	Specifications for commercial refrigeration
33	Oil and Gas	Reduction in venting / leaks from oil and gas systems
34	Transportation	Requirement of low-GWP GHGs for new Motor Vehicle ACs
35	Transportation	Hybridization of medium and heavy-duty diesel vehicles
36	Electricity	Reduction of SF ₆ in electricity generation
37	Commercial	High GWP refrigerant tracking, reporting and recovery program
38	Commercial	Foam recovery / destruction program
39	Fire Suppression	Alternative suppressants in fire protection systems
40	Transportation	Strengthen light-duty vehicle standards
41	Transportation	Truck stop electrification with incentives for truckers
42	Transportation	Diesel – Vessel speed reductions
43	Transportation	Transportation refrigeration – electric standby
44	Agriculture	Electrification of stationary agricultural engines

South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) has jurisdiction over an area of approximately 10,743 square miles. This area includes all of Orange County, all of Los Angeles County except for the Antelope Valley, the nondesert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County. The South Coast Air Basin (SCAB) is a subregion of the SCAQMD jurisdiction. While air quality in this area has improved, the SCAB requires continued diligence to meet air quality standards. The SCAQMD has adopted a series of AQMPs to meet the CAAQS and NAAQS. These plans require control technology for existing sources, control programs for area sources and indirect sources, a SCAQMD permitting system designed to allow no net increase in emissions from any new or modified permitted emission sources and transportation control measures.

The SCAQMD adopted a comprehensive AQMP update, the 2007 AQMP for the SCAB, on June 1, 2007. The 2007 AQMP outlines the air pollution control measures needed to meet federal health-based standards for ozone (8-hour standard) by 2024, and PM_{2.5} by 2015. This revision to the AQMP also addresses several State and federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes and new air quality modeling tools. The 2007 AQMP is consistent with and builds upon the approaches taken in the 2003 AQMP for the attainment of the federal ozone air quality standard but highlights the significant amount of reductions needed and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria pollutant standards within the timeframes allowed under FCAA (SCAQMD, 2007a).

The SCAQMD adopts rules and regulations to implement portions of the AQMP. Several of these rules may apply to construction or operation of the project. For example, SCAQMD Rule 403 requires the implementation of best available fugitive dust control measures during active operations capable of generating fugitive dust emissions from onsite earth-moving activities, construction/demolition activities, and construction equipment travel on paved and unpaved roads. As another example, SCAQMD Regulation XIII ensures that the operation of new facilities do not interfere with progress in attainment of the NAAQS.

The SCAQMD has published a *CEQA Air Quality Handbook* (SCAQMD, 1993) that is intended to provide local governments with guidance for analyzing and mitigating project-specific air quality impacts. This handbook provides standards, methodologies and procedures for conducting air quality analyses and was used extensively in the preparation of this analysis.

The County of San Bernardino has not developed specific air quality thresholds for air quality impacts. However, because of the SCAQMD's regulatory role in the SCAB, the significance thresholds and analysis methodologies in the SCAQMD's *CEQA Air Quality Handbook* are used in evaluating project impacts.

Construction. The project would result in a significant construction air quality impact if regional emissions exceed the significance thresholds set forth in **Table 3.2-4**.

**TABLE 3.2-4
AIR QUALITY SIGNIFICANCE THRESHOLDS**

Pollutant	Construction	Operation
NO _x	100 lbs/day	55 lbs/day
VOC (ROG)	75 lbs/day	55 lbs/day
PM ₁₀	150 lbs/day	150 lbs/day
PM _{2.5}	55 lbs/day	55 lbs/day
CO	550 lbs/day	550 lbs/day

SOURCE: SCAQMD, 2007. *CEQA Air Quality Handbook*. December 2007.

Operations. The project would result in a significant operational air quality impact if any of the following occur.

- Regional emissions exceed the significance thresholds set forth in Table 3.2-4.
- Either of the following conditions would occur at an intersection or roadway within one-quarter mile of a sensitive receptor:
 - The proposed project causes an exceedance of the California one-hour or eight-hour CO standards of 20 or 9.0 ppm, respectively; or
 - For intersection or roadways where existing CO levels exceed California standards, the incremental increase due to the project is equal to or greater than 1.0 ppm for the one-hour CO standard, or 0.45 ppm for the eight-hour CO standard.
- The project would not be compatible with SCAQMD, SCAG, City of Highland, and/or the City of Redlands air quality goals and policies.

Toxic Air Contaminants. The project would result in a significant operational air quality impact if any of the following occur:

- Carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum individual cancer risk of ten in one million or an acute or chronic hazard index of 1.0. (SCAQMD, 2007b).
- Hazardous materials associated with on-site stationary sources result in an accidental release of air toxic emissions or acutely hazardous materials posing a threat to public health and safety.

3.2.2 Existing Air Quality and Environmental Setting

3.2.2.1 Regional Setting

The proposed project is located in San Bernardino County, which lies within the SCAB. The SCAB consists of the Los Angeles County, San Bernardino County, Orange County, and a portion of Riverside County. The South Coast Air Basin is an approximately 6,600 square mile

area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties.

Climate

About 90 percent of the county is desert; the remainder consists of the San Bernardino Valley and the San Bernardino Mountains. The average maximum annual temperature in San Bernardino is 80.1 degrees Fahrenheit, with an average minimum of 49.3 degrees Fahrenheit. The average annual rainfall in the region ranges from 13 to 16 inches, and most of it occurs between November and March. The Santa Ana winds typically blow out of the Cajon pass into the valley in the autumn.

3.2.2.2 Air Quality in the Project Area

The SCAQMD maintains monitoring stations within San Bernardino County that monitor air quality and compliance with associated ambient standards. The closest station to the project site is Redlands-Dearborn Monitoring Station. The following pollutants are monitored at this station: ozone (O₃), PM₁₀ and PM_{2.5}. The most recent published data for the Redlands-Dearborn Monitoring Station is presented in **Table 3.2-5**, which encompasses the years 2004 through 2006.

Construction activities would require the use of diesel-powered off-road equipment that would emit criteria pollutants and diesel particulate matter (DPM) from exhaust emissions and fugitive dust for the duration of the construction period. Lining the reservoir would also emit VOCs. Hauling excavated material from the construction sites and delivering materials and equipment to the construction sites would generate emissions, as would construction worker commute trips.

Operational emissions would result from employee commute trips and routine maintenance trips. Since the project would increase electricity usage, emissions associated with power generation would increase. No new stationary sources would be constructed that would require air emissions permits from the SCAQMD, and the project does not include any substantial sources of TAC emissions.

The Multiple Air Toxics Exposure Study III (MATES III) is a monitoring and evaluation study conducted in the South Coast Air Basin (Basin) (SCAQMD, 2008). The study is a follow on to previous air toxics studies in the Basin and is part of the South Coast Air Quality Management District Governing Board Environmental Justice Initiative. The MATES III Basin population weighted average risk is estimated at 810 per million (682 from DPM). This risk refers to the expected number of additional cancers in a population of one million individuals that is exposed over a 70-year lifetime. Using the updated MATES III methodology, about 94 percent of the risk is attributed to emissions associated with mobile sources, and about 6 percent of the risk is attributed to toxics emitted from stationary sources, which include industries, and businesses such as dry cleaners and chrome plating operations. The results indicate that diesel exhaust is the major contributor to air toxics risk, accounting for about 84 percent of the total. The population weighted average cancer risk for San Bernardino County is estimated to be 631 per million.

**TABLE 3.2-5
AIR QUALITY DATA SUMMARY (2004 - 2006)**

Pollutant*	Monitoring Data by Year			
	Standard ^a	2004	2005	2006
Ozone – Redlands-Dearborn				
Highest 1 Hour Average (ppm) ^b	0.09	0.16	0.15	0.17
Days over State Standard		76	36	62
Highest 8 Hour Average (ppm) ^b	0.08	0.14	0.12	0.14
Days over National Standard		12	6	11
Particulate Matter (PM10) – Redlands-Dearborn				
Highest 24 Hour Average (µg/m ³) ^b	50	84	58	97
Est. Days over State Standard ^c		113.7	50.2	62.7
Highest 24 Hour Average (µg/m ³) ^b National Measurement	150	88	61	103
Est. Days over National Standard ^c		0	0	0
State Annual Average (µg/m ³) ^b	20	36.5	31.5	34.4
Particulate Matter (PM2.5) – San Bernardino-4th Street				
Highest 24 Hour Average (µg/m ³) ^b	35	93.4	106.2	55
Days over National Standard		4	1	0
State Annual Average (µg/m ³) ^b	12	NA	NA	NA

NOTES: Values in **bold** are in excess of at least one applicable standard. NA = Not Available.

* Toxic Air Contaminates are not monitored at this site.

^a Generally, state standards and national standards are not to be exceeded more than once per year.

^b ppm = parts per million; µg/m³ = micrograms per cubic meter.

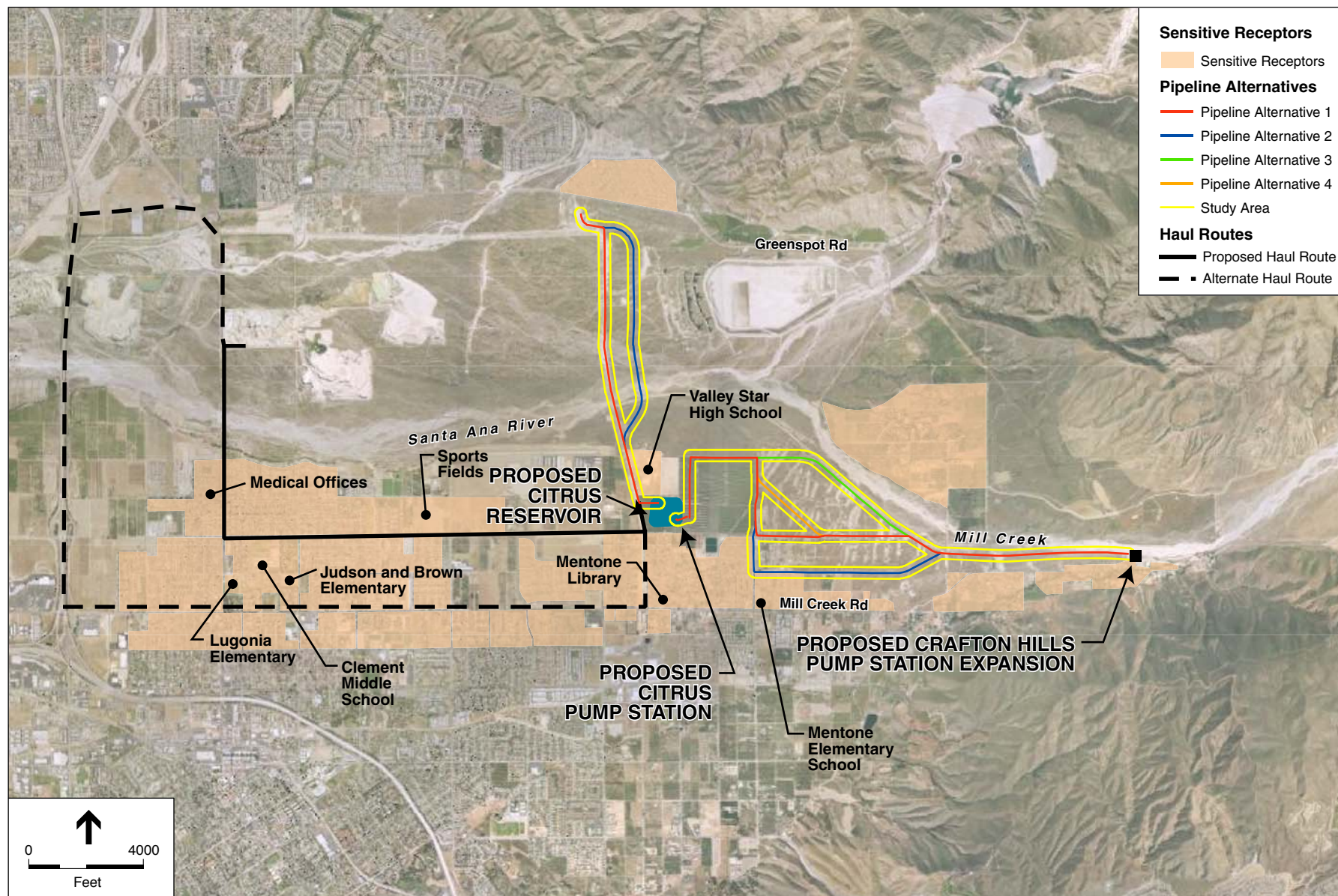
^c PM₁₀ is not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.

SOURCE: California Air Resources Board, 2007e. *Summaries of Air Quality Data*, 2004, 2005, 2006; <http://www.arb.ca.gov/adam/cgi-bin/db2www/polltrends.d2w/start>

3.2.2.3 Sensitive Receptors

Some land uses are considered more sensitive to air pollutants than others. Residences, hotels, schools, rest homes, and hospitals are generally more sensitive to air emissions than commercial and industrial land uses. **Figure 3.2-1** shows the location of residences, schools and day care facilities closest to the construction zone; the closest sensitive receptors to components of each alternative are described below.

The following is a list of identified sensitive receptors near the project site. Figure 3.2-1 identifies the sensitive receptors in relation to the proposed project.



SOURCE: GlobeXplorer, 2007; ESA, 2008.

DWR - East Branch Extension . 206008.01

Figure 3.2-1
Location of Sensitive Receptors
Near Project Area

Alternative Alignment 1: The closest sensitive receptors to Alternative Alignment 1 are residences approximately 25 feet east of Cone Camp Road north of the Santa Ana River and the Valley Star High School at 9355 Opal Avenue, approximately 75 feet east of the proposed pipeline route. Redlands Unified School District, Mentone Elementary School is located at 1320 Crafton Avenue near Madeira Avenue. The Mentone Library and Senior Center is located at 1331 Opal Ave. Three additional schools are located along the truck route on San Bernardino Avenue to Orange Street: Clement Middle School at 501 E. Pennsylvania Ave, Lugonia Elementary at 202 E. Pennsylvania Ave, and Judson and Brown Elementary at 1401 E. Pennsylvania Ave. A pediatrics center is located at 1711 Orange Street along the proposed truck haul route.

Alternative Alignment 2: The closest sensitive receptors to Alternative Alignment 2 includes those identified for Alternative Alignment 1 as well as residences approximately 15 feet west of Crafton Avenue and south on Madeira Avenue.

Alternative Alignment 3: The closest sensitive receptors to Alternative Alignment 3 includes those identified for Alternative Alignment 1 as well as residences located 1,000 feet north, across the Mill Creek streambed.

Alternative Alignment 4: The closest sensitive receptors to Alternative Alignment 4 includes those identified for Alternative Alignment 1 as well as residences at the northwestern end of Crafton Avenue, approximately 1,500 feet away.

Citrus Reservoir: The closest sensitive receptors to the Citrus Reservoir are residences on San Bernardino Avenue approximately 250 feet to the southwest.

Citrus Pump Station: The closest sensitive receptors to the Citrus Pump Station are residences approximately 500 feet to the south on San Bernardino Avenue.

Crafton Hills Pump Station: The closest sensitive receptor to the existing pump station is a residence about 85 feet west of the pump station on the other side of an existing sound wall.

3.2.4 Impact Assessment

The proposed project's potential impacts were assessed using the *CEQA Guidelines* Appendix G Checklist. The following sections discuss the key issue areas identified in the *CEQA Guidelines* with respect to the project's potential effect to air quality. Significance thresholds are identified and a significance conclusion is made following the discussion.

3.2.4.1 Consistency with Air Quality Management Plans

This section discusses the following CEQA Checklist question:

Would the project conflict with or obstruct implementation of the applicable air quality plan?

Significance Threshold

The proposed project would have a significant impact if it were inconsistent with the applicable Air Quality Management Plan.

Impact Analysis

Two criteria will be used as indicators of consistency with air quality policies. The first criterion requires that the project would not result in an increase in the frequency or severity of existing air quality violations, or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emission reductions specified in the AQMP. The second criterion requires that the project would not exceed the assumptions made in preparing the AQMP.

With respect to the first criterion, SCAQMD methodologies require an air quality analysis to include forecasts of project emissions during construction and operation. The proposed project would emit criteria pollutants during construction and operations. Local emissions from project operations would be minimal because of the limited number of daily vehicle trips necessary for maintenance operations and because pumps would operate using electricity from the statewide grid rather than being powered by local internal combustion engines or generators. The AQMP identifies construction activities as contributing factors to the overall emissions sources and provides source control measures to reduce this contribution, but does not conclude that individual projects would result in measurably more frequent or more severe air quality violations or delay the attainment of air quality standards for the basin. Compliance with the Rules established by the SCAQMD to reduce construction emissions including fugitive dust control measures and vehicle maintenance measures would ensure that the project would not conflict with the current AQMP. Compliance with the mitigation measures below would ensure that the project complies with SCAQMD Rules for construction activities and long-term operations.

The second AQMP consistency criterion requires that the project does not exceed the assumptions in the AQMP. A project is consistent with the AQMP if it is consistent with the population, housing and employment assumptions that were used in the development of the AQMP. The 2007 AQMP, the most recent AQMP adopted by the SCAQMD, incorporates, in part, SCAG's 2004 Regional Transportation Plan (RTP) socioeconomic forecast projections of regional population and employment growth. The 2004 RTP is based on growth assumptions through 2030 developed by each of the cities and counties in the SCAG region. All projects in the region contribute to regional pollution and the emissions associated with these projects are modeled by the SCAQMD to determine future air quality conditions. If pollutant concentrations are shown by the model to exceed state or federal ambient air quality standards, SCAQMD, SCAG, and CARB develop additional control strategies to offset emissions and reduce concentrations to a level below the standards. The project site is located in the San Bernardino Associated Governments sub-region of the SCAG. The San Bernardino Associated Governments growth forecasts have been incorporated into the 2030 SCAG projections. The proposed project is consistent with growth assumptions included in the AQMP.

The following mitigation measures would reduce impacts to a less-than-significant level.

Mitigation Measures

AQ-1: DWR shall ensure that contractors implement a fugitive dust control program pursuant to the provisions of SCAQMD Rule 403.^[1]

AQ-2: DWR shall ensure that construction equipment is properly tuned and maintained in accordance with manufacturer's specifications.

AQ-3: DWR shall ensure that contractors maintain and operate construction equipment so as to minimize exhaust emissions. During construction, trucks and vehicles in loading and unloading queues would turn their engines off when not in use to reduce vehicle emissions.

AQ-4: Electricity from power poles rather than temporary diesel- or gasoline-powered generators shall be used where power is available within 100 feet of construction area.

AQ-5: In accordance with the California Air Resource Board's Idling Vehicle Rule, DWR shall ensure that construction vehicles are prohibited from idling in excess of five minutes, both on- and off-site.

AQ-6: DWR shall ensure that coatings and solvents used in the project are consistent with applicable SCAQMD rules and regulations.

AQ-7: Dust control measures such as wetting or use of soil binders shall be implemented on haul roads in front of residences on Cone Camp Road periodically (a minimum of 3 times daily) throughout each construction day to minimize dust emissions at the closest sensitive receptors.

AQ-8: Construction vehicle speeds would be no greater than 15 miles per hour passing residences on Cone Camp Road.

AQ-9: Wheel washers shall be installed where vehicles exit the construction site onto paved roads.

AQ-10: Haul vehicles shall be covered or shall comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measures AQ-1 through AQ-10 would ensure that the proposed project complies with SCAQMD Rules for construction activities and long-term operations.

^[1] SCAQMD Rule 403 requirements are detailed in Appendix B.

3.2.4.2 Violation of an Air Quality Standard

This section discusses the following CEQA Checklist question:

Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Significance Threshold

Criteria Pollutants. The proposed project would have a significant impact if it generated emissions of air pollutants that would exceed the SCAQMD emissions thresholds shown in **Table 3.2-4**.

CO Hot Spots. The project would result in a significant operational air quality impact if any of the following occur:

- The proposed project causes an exceedance of the California one-hour or eight-hour CO standards of 20 or 9.0 ppm, respectively; or
- For intersection or roadways where existing CO levels exceed California standards, the incremental increase due to the project is equal to or greater than 1.0 ppm for the one-hour CO standard, or 0.45 ppm for the eight-hour CO standard.

Toxic Air Contaminants. The project would result in a significant operational air quality impact if any of the following occur:

- Carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum individual cancer risk of ten in one million or an acute or chronic hazard index of 1.0. (SCAQMD, 2007b).
- Hazardous materials associated with on-site stationary sources result in an accidental release of air toxic emissions or acutely hazardous materials posing a threat to public health and safety.

Impact Analysis

Construction-related emissions would last up to three years, and may cause adverse effects on air quality. The project's construction activities include site preparation, earthmoving, and general construction. Site preparation includes activities such as general land clearing and grubbing. Earthmoving activities include cut-and-fill operations, trenching, soil compaction, and grading. General construction includes adding improvements such as roadway surfaces, structures, and facilities. The emissions generated from these construction activities include:

- Dust (including PM₁₀ and PM_{2.5}) primarily from "fugitive" sources (i.e., emissions released through means other than through a stack or tailpipe) such as soil disturbance;
- Combustion emissions of criteria air pollutants (ROG, NO_x, carbon monoxide, carbon dioxide, PM₁₀, and PM_{2.5}) primarily from operation of heavy off-road construction equipment (primarily diesel-operated), portable auxiliary equipment, and construction worker automobile trips (primarily gasoline-operated); and

- Evaporative emissions (ROG) from asphalt paving and architectural coatings.

Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. It is mandatory for all construction projects in the SCAB to comply with SCAQMD Rule 403 for fugitive dust (SCAQMD, 2005b). Specific Rule 403 control requirements include, but are not limited to, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site, and maintaining effective cover over exposed areas. Construction emissions of NO_x, ROG, PM₁₀, PM_{2.5}, CO, and CO₂ were estimated based on maximum crew, truck trip, and construction activity data from the applicant. Emissions are based on criteria pollutant emission factors from URBEMIS 2007. The results of this analysis are summarized in **Table 3.2-6**. As shown in Table 3.2-6, when the emissions from the project components are combined, the construction emissions would exceed the significance threshold for ROG, and NO_x.

**TABLE 3.2-6
UNMITIGATED EMISSIONS FROM PROJECT CONSTRUCTION
(POUNDS PER DAY)¹**

Project Component	ROG	NO _x	CO	PM ₁₀	PM _{2.5}	CO ₂
Citrus Pump Station and Reservoir						
2009	20	193	95	41	17	19,572
2010	278	343	224	81	32	42,795
2011	208	195	120	3	9	26,902
SCAQMD Thresholds of Significance	75	100	550	150	55	NA
Significant (Yes or No)?	Yes	Yes	No	No	No	No
Pipeline Extension						
2009	14	104	59	25	9	9,627
2010	14	114	61	25	9	10,940
SCAQMD Thresholds of Significance	75	100	550	150	55	NA
Significant (Yes or No)?	No	Yes	No	No	No	No
Crafton Hills Pump Station Expansion						
2009	6	42	24	3	2	3,900
2010	5	34	20	2	2	3,180
SCAQMD Thresholds of Significance	75	100	550	150	55	NA
Significant (Yes or No)?	No	No	No	No	No	No
Combined Total For Project						
2009	40	339	178	69	28	33,099
2010	297	491	305	108	43	56,915
2011	208	195	120	3	9	26,902
SCAQMD Thresholds of Significance	75	100	550	150	55	NA
Significant (Yes or No)?	Yes	Yes	No	No	No	No

NOTE: Values in **bold** are in excess of the applicable SCAQMD significance threshold. NA = Not Available

¹ Project construction emissions estimates for off-road equipment were made using URBEMIS2007, version 9.2. 4. PM₁₀ and PM_{2.5} emission estimates are based on compliance with SCAQMD Rule 403 requirements for fugitive dust suppression. A copy of SCAQMD Rule 403 and modeling assumptions are included in Appendix B.

SOURCE: ESA, 2008.

Operational emissions of the proposed project would be direct emissions generated in the project area and indirect emissions generated elsewhere by power plants providing electricity for the project. Local direct emissions would be from minimal new on-road vehicular traffic due to routine maintenance as well as two people staffed at the pump station. The introduction of such limited new daily vehicles trips would not result in enough of an increase to require a CO Hot Spot Analysis or mobile emission analysis using the URBEMIS 2007 model.

Indirect emissions would be the result of new electrical demand from the pumps, computers, lights, and other miscellaneous sources at the pump station. Because power would be provided over the statewide electrical grid, indirect emissions from the use of electricity could occur at any of the fossil-fueled power plants in California or neighboring states, or from hydroelectric or nuclear plants or renewable energy sources. For all power plants, it can be assumed that the emissions are reviewed as part of the permitting process before the power plant is built or expanded. In California, the California Energy Commission uses the Application for Certification (AFC) process for major power plants that are greater than 49 Megawatts. The potential air quality impacts of full operation of the power plants are reviewed in the local context prior to plants being permitted and licensed.

As shown in Table 3.2-6, project emissions would exceed the air quality standard for ROG and NO_x. The proposed projects violation of this threshold would result in a potentially significant impact. Implementation of Mitigation Measures AQ-1 through AQ-10, presented above, would help reduce emission impacts. Nonetheless, this violation of this air quality threshold would result in a significant and unavoidable impact.

Toxic Air Contaminants

Projects, such as this project, that would have minimal TAC emissions do not require a Health Risk Assessment (HRA) to determine the individual cancer risk. Also, construction emissions generally do not require an HRA because construction is typically limited to a short period of time and the HRA considers individual cancer risk over the long-term (i.e., 70 years). However, because the construction period for project components would last from two to three years and include diesel-powered construction equipment, an HRA was conducted to determine if the project construction would exceed the significance criteria for TACs related to an increase in individual cancer risk. A summary of the HRA is provided in this Air Quality Section, a longer description of the HRA is provided in **Appendix B** of this EIR.

The SCAQMD has established the CEQA significance threshold for individuals exposed to new TAC sources as the increased incremental cancer risk of 10 in one million or greater. The HRA analyzed the potential incremental cancer risks to residents in the project vicinity of the East Branch Extension during construction activities. The primary TAC from construction is DPM. Four construction activities were identified as potential sources of DPM. These activities include: (1) construction of the pipeline, (2) construction of the Citrus Reservoir and Pump Station, (3) construction of the Crafton Hills Pump Station Expansion, and (4) haul trips to export soil excavated during construction of the Citrus Reservoir. Emission rates for the four activities were estimated using the URBEMIS 2007 model, which incorporates emission factors from CARB's

OFFROAD and EMFAC2007 models. Emissions were input into the USEPA approved dispersion model AERMOD to calculate ambient air concentrations at receptors in the project vicinity.

The results of the HRA found that project construction would have a less-than-significant impact from DPM emissions at all sensitive receptors. The maximum exposed receptor would have an estimated increased incremental cancer risk of 5.6 in one million, which is about one-half of the SCAQMD significance threshold of 10 in one million. This risk should also be viewed in the context of the existing cancer risk from DPM in the area. According to Draft Mates III report issued by the SCAQMD in January 2008, the estimated population weighted cancer risk for San Bernardino County is 631 in one million¹. The proposed project would not emit TACs which would exceed SCAQMD significance threshold. TAC impacts related to the violation of an air quality standard would be less than significant.

Mitigation Measures

Implement AQ-1 through AQ-10.

Significance Conclusion

Significant and unavoidable. Implementation of Mitigation Measures AQ-1 through AQ-10 would reduce emissions associated with construction activities. Nonetheless, construction-related emissions of ROG and NO_x would exceed the emissions significance thresholds and remain significant and unavoidable. Emissions of TACs during project construction would result in a less-than-significant increase of cancer risk to local sensitive receptors.

3.2.4.3 Cumulative Air Emissions

This section discusses the following CEQA Checklist question:

Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Significance Threshold

The proposed project would have a significant impact if it would contribute significant quantities of an air pollutant for which the cumulative baseline condition is in nonattainment status according to the federal Clean Air Act.

¹ SCAQMD, 2008. *Multiple Air Toxics Exposure Study in the South Coast Air Basin – Draft Report*, January 2008, available online at: <http://www.aqmd.gov/prdas/matesIII/matesIII.html>, accessed May 6, 2008.

Impact Analysis

A cumulative impact arises when two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the project's incremental effects must be viewed in connection with the effects of past, current, and probable future projects. Notably, any project that would individually have a significant air quality impact would also be considered to have a significant cumulative impact.

Construction activity associated with other projects would generally involve the use of similar equipment and may overlap with the construction schedule of the proposed project. As with the proposed project, it is assumed that other project construction activity would comply with the SCAQMD required mitigation measures, which would reduce air quality impacts but not eliminate air pollutant emissions completely.

The SCAQMD's approach for assessing cumulative operational impacts is based on the SCAQMD's AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and state CAAs. This forecast also takes into account SCAG's forecasted future regional growth. As such, the analysis of cumulative impacts focuses on determining whether the project is consistent with forecasted future regional growth. If a project is consistent with the regional population, housing and employment growth assumptions upon which the SCAQMD's AQMP is based, then future development would not impede the attainment of ambient air quality standards and a significant cumulative air quality impact would not occur.

The impact of TACs to community health within the SCAB is a regional concern being addressed by various SCAQMD programs. The SCAQMD has published an Air Toxics Control Plan designed to limit TAC emissions in an equitable and cost-effective manner (SCAQMD, 2000). In addition the SCAQMD addressed health risk in the SCAB and TAC emissions reduction measures in the 2003 AQMP. As discussed above, cumulative sources from all cumulative proposed projects throughout the SCAB would emit substantial amounts of TACs, primarily from mobile emission sources. The current estimated population weighted cancer risk in San Bernardino County is 631 per million people (SCAQMD, 2008). However, TAC emissions from project construction and project operations would be below the SCAQMD significance threshold for cancer risk (10 in one million) and would not have a significant impact on community health.

Mitigation Measures

Implement AQ-1 through AQ-10.

Significance Conclusion

Significant and unavoidable. Implementation of mitigation measures AQ-1 through AQ-10 would reduce emissions associated with construction activities. However, the cumulative impact of the project and other construction projects would be significant and unavoidable since the proposed project alone would generate significant emissions during construction of pollutants for which the air basin is currently in nonattainment status. Because the

project has a significant construction impact, it would have a cumulatively considerable impact on the overall cumulative impact from construction.

While the total impact of TAC emission from all proposed projects in the region would be significant, the impact of TAC emissions from the proposed project construction would be approximately half the significance threshold at the maximum exposed locations and would not be a cumulatively considerable contribution to the overall cumulative impact. Therefore the proposed project would have a less-than-significant cumulative impact with regard to TACs.

3.2.4.4 Effects on Sensitive Receptors

This section discusses the following CEQA Checklist question:

Would the project expose sensitive receptors to substantial pollutant concentrations?

Significance Threshold

The project would result in a significant impact if it would expose sensitive receptors to substantial pollutant concentrations.

Impact Analysis

Construction activities occurring over a three-year period would emit air pollutants in quantities that would exceed thresholds of significance. These emissions would be attributable to off-road construction equipment and on-road haul truck exhaust. As shown in Table 3.2-6, the emissions would be considered significant if project component are constructed simultaneously. The project would potentially expose sensitive receptors to substantial pollutant concentrations for several reasons:

- the combined construction emissions (see Table 3.2-6) would exceed the SCAQMD emission threshold for ROG and NO_x;
- construction activities would be located near sensitive receptors;
- ROG and NO_x emissions that exceed the threshold can affect regional pollution (ozone levels); and
- the region is already nonattainment for ozone (ROG and NO_x are ozone precursors).

Although these effects would occur only during construction, the effects would be potentially significant at times (depending upon the ambient pollution concentrations) for up to three years at various locations in the project vicinity and the region. Effects to sensitive receptors would be reduced by the implementation of the previously identified Mitigation Measures AQ-1 through AQ-10.

Project operational emissions in the region would be generated primarily from a limited increase in on-road vehicular traffic associated with the project. In regards to the on-road vehicular traffic,

a minimal number of new trips (<10) would be required daily for routine operations, inspection and maintenance of the pipeline, reservoir, and pump stations. The minimal increase of new trips would result in a less-than-significant increase in emissions to the local air quality environment.

As discussed in Impact 3.2.4.2, construction would generate toxic air contaminants for about three years, but the HRA found the health risk of the construction emissions would be less than significant. Nonetheless, construction-related emissions of ROG and NO_x would exceed the emissions significance thresholds and remain significant and unavoidable.

Mitigation Measures

Implement AQ-1 through AQ-10.

Significance Conclusion

Significant and unavoidable. Implementation of Mitigation Measures AQ-1 through AQ-10 would reduce emissions associated with construction activities but the emissions could still result in impacts to human health.

3.2.4.5 Odor Impacts

This section discusses the following CEQA Checklist question:

Would the project create objectionable odors affecting a substantial number of people?

Significance Threshold

The project would result in a significant impact if it would expose a substantial number of people to objectionable odors.

Impact Analysis

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed project does not include any uses identified by the SCAQMD as being associated with odors. The project does propose an underground septic system for wastewater disposal at the Citrus Reservoir pump house. In the event that the septic system failed to properly operate, odors may be emitted. This potential operation odor would be a short-term maintenance issue that would not result in long-term odor impacts as the septic tank would be pumped and/or fixed to provide sanitary operation for the employees. Furthermore, there are not a substantial number of sensitive receptors nearby that would be affected.

The construction period of the project would generate odors from diesel emissions from truck trips. While traveling through developed areas, residences could be affected. However, none of

the haul trucks would be allowed to idle their engines in front of residences for greater than five minutes (see Mitigation Measure AQ-5). Furthermore, construction would not occur near residences during the evening and nighttime; when residences are more likely to be home and would have a greater sensitivity to odorous diesel emissions. Therefore, odor emissions from construction activities would not be significant.

Mitigation Measures

Implement AQ-5.

Significance Conclusion

Less than significant with mitigation. The project does not include any land uses identified by the SCAQMD as being associated with odors and Mitigation Measure AQ-5 would reduce the impact of odorous diesel emissions on sensitive receptors.

3.2.4.6 Greenhouse Gas Emissions

This section discusses the potential for greenhouse gas emissions caused by the proposed project to have a negative effect on global climate change.

Significance Threshold

The project would have a significant impact if it would conflict with implementation of state goals for reducing greenhouse gas emissions.

Impact Analysis

The California Global Warming Solutions Act of 2006 (AB 32) establishes a goal in California of reducing GHG emissions in California to 1990 levels by 2020. Presently, standards or methods of achieving this goal have not been established by the state. The California Air Resources Board has been directed by the Governor's office to develop procedures to implement the goal.

Standards for determining the significance of an individual project's GHG emissions have not been established. Quantitative thresholds of significance have not been established. Although stationary sources that emit more than 25,000 metric tons per year of CO₂e (such as cement plants, oil refineries, electric generating facilities/providers, co-generation facilities, or hydrogen plants or other stationary combustion sources) are currently expected to be required to quantify and report their emissions, other projects emitting less may still contribute to global warming. For any sized project, Project specific emissions would not be expected to individually have an impact on global climate change (AEP, 2007), any impact would be part of the overall cumulative impact of GHG emissions. For the purposes of this analysis, the primary concern would be whether the project would be in conflict with the state goals for reducing GHG emissions.

Three types of analyses are used in determining whether the project could be in conflict with the state goals for reducing GHG emissions including the following:

- The potential conflicts with the CARB 44 early action strategies;
- The relative size of the project in comparison to the estimated GHG reduction goal of 174 million metric tons per year of CO₂e by 2020 and in comparison to the size of major facilities that are required to report GHG emissions (25,000 metric tons per year of CO₂e),² and
- The basic parameters of the project and whether the project is inherently energy efficient, would lead to wasteful energy use, or is neutral with regard to future energy use.

With regard to the first bullet, the project does not pose any apparent conflict with the most recent list of the CARB early action strategies (see Table 3.2-3).

With regard to the second bullet, project construction GHG emissions would be approximately 4,733 metric tons of CO₂e emissions in the maximum year (the second year of construction); as computed by URBEMIS2007 (see Appendix B GHG Emissions Calculations). These emissions would be temporary. Project operations from pump operations (the primary source of project CO₂e emissions) are estimated to produce approximately 15,618 net new metric tons of CO₂e emissions in a peak year. This estimate assumes annual electrical use of 50.59 M kWh to operate the Crafton Hills Pump Station and the Citrus Pump Station (Appendix B GHG Emissions Calculations) in a future peak year compared to an approximate existing peak year with electrical use of 11.46 M kWh.

The project electrical demand would result in the generation of GHG emissions by power generating facilities in the western US. As applicable, these power generating facilities would be subject to emissions reduction efforts pursuant to AB 32 and CARB goals. The energy needed to operate the pumps would result in GHG emission of a similar magnitude of a major source of GHG (>25,000 metric tons per year of CO₂e emissions). However, the proposed project would contribute only 0.012 percent of the state's overall annual reduction goal (174 million metric tons per year of CO₂e emissions). The additional energy required to operate Phase II of the East Branch Extension would be approximately 0.5 percent of the overall electricity used by the SWP.³ Estimates of future energy demand in the state account for increasing water demands in Southern California. Power generators will be subject to emissions reduction policies that recognize increasing energy demands in the state and will be responsible for implementing measures to meet state-wide GHG emission reduction goals. The proposed project is consistent with estimates of future utility demands in the region.

With regard to the third bullet, the project appears to be efficient with regard to energy use. The construction would use materials located at an average of 4.5 miles away to minimize transport length of materials to the site. New pumps would be installed that would maximize efficiency.

² The State of California has not provided guidance as to quantitative significance thresholds for assessing the impact of greenhouse gas emissions on climate change and global warming concerns. Nothing in the CEQA Guidelines has yet addressed this issue.

³ 9,859.53 million kwh used by the SWP in 2004. *Department of Water Resources, Management of the State Water Project Bulletin 132-05. December, 2006*

The system would have greater flexibility to maximize energy use to coincide with off-peak demand periods. Therefore, operation of the proposed project would not result in wasteful use of energy.

Mitigation Measures

No mitigation measures available.

Significance Conclusion

Less than significant. Although project emissions would contribute to the state-wide emissions inventory of GHG, the project would not conflict with the state goal of reducing emissions. Therefore, this impact would be less than significant.

3.2.5 Mitigation Measure Summary Table

Table 3.2-7 presents the impacts and mitigation summary for Air Quality.

**TABLE 3.2-7
IMPACTS AND MITIGATION SUMMARY**

Proposed Project Impact	Mitigation Measure	Significance after Mitigation
Consistency with Air Quality Management Plans: The proposed project would not conflict with or obstruct implementation of the applicable air quality plan.	AQ-1 through AQ-10	Less than Significant
Violation of an Air Quality Standard: The proposed project would emit air pollutants in daily quantities that could exceed SCAQMD significance thresholds during construction.	AQ-1 through AQ-10	Significant and unavoidable
Cumulative Air Emissions: The proposed project would result in a significant and unavoidable adverse impact to cumulative air quality.	AQ-1 through AQ-10	Significant and unavoidable
Effects on Sensitive Receptors: The proposed project would result in a significant and unavoidable impact to sensitive receptors.	AQ-1 through AQ-10	Significant and unavoidable
Odor Impacts: The proposed project would not create objectionable odors that would significantly affect a substantial amount of people.	AQ-5	Less than significant
Greenhouse Gas Emissions: The proposed project would result in increased greenhouse gas (GHG) emissions	None required	Less than significant

3.3 Biological Resources

This section describes the existing conditions of the biological resources within, and in the vicinity of, the project area, as well as potential impacts on those resources. The project is described in detail in Chapter 2, Project Description. The project is located in the Santa Ana River Watershed near the confluence of the Santa Ana River and Mill Creek (Figure 2-1).

3.3.1 Regulatory Framework

3.3.1.1 Special-Status Species

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) in the Department of the Interior, and the National Marine Fisheries Service (NMFS) under the National Oceanic and Atmospheric Administration (NOAA) in the Department of Commerce share responsibility for administration of the federal Endangered Species Act (FESA). The FESA provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered in the United States or elsewhere. The ESA has four major components: provisions are made for listing species, requirements for federal agency consultation with USFWS or NMFS if a federal action could result in an adverse affect on a listed species, prohibitions against “taking” of listed species, and the provisions for permits that allow incidental “take” of listed species for otherwise lawful activities. Under FESA, the term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The definition of “harm” includes the adverse modification or impact of habitat for listed species. The FESA also requires the preparation of recovery plans and the designation of critical habitat for listed species.

The Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711) makes it unlawful to possess, buy, sell, purchase, barter or “take” any migratory bird listed in Title 50 of the Code of Federal Regulations Part 10. “Take” is defined as possession or destruction of migratory birds, their nests or eggs. Disturbances that cause nest abandonment and/or loss of reproductive effort or the loss of habitats upon which these birds depend may be a violation of the Migratory Bird Treaty Act.

3.3.1.2 California Fish and Game Code

California Endangered Species Act

The California Endangered Species Act (CESA) (California Fish and Game Code Section 2050 *et. seq.*) is similar to the main provisions of the FESA and is administered by the California Department of Fish and Game (CDFG). Unlike its federal counterpart, CESA applies the take prohibitions to not only listed threatened and endangered species, but also to state candidate species for listing. Section 86 of the Fish and Game Code defines “take” as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The CDFG maintains lists for

Candidate-Endangered Species and Candidate-Threatened Species, which have the same protection as listed species. Under CESA the term “endangered species” is defined as a species of plant, fish, or wildlife, which is “in serious danger of becoming extinct throughout all, or a significant portion of its range” and is limited to species or subspecies native to California. CESA prohibits the “taking” of listed species except as with the FESA issues take permits for otherwise lawful activities.

California Fish and Game Code Sections 3503 and 3503.5

Fish and Game Code 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Fish and Game Code Section 3503.5 states specifically that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.

California Fish and Game Code Section 3511, 4700 and 5050

Fish and Game Code Sections 3511, 4700 and 5050 provide the designation of certain fully protected birds, mammals, and reptiles/amphibians respectively stating that the fully protected species or parts thereof may not be taken or possessed at any time.

3.3.1.3 Clean Water Act Section 404

Wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and floodwaters, and water recharge, filtration, and purification functions. Technical standards for delineating wetlands have been developed by the U.S. Army of Engineers (USACE) which generally defines wetlands through consideration of three criteria: hydrology, soils, and vegetation. Under Section 404 of the Clean Water Act (CWA), the USACE is responsible for regulating the discharge of dredged or fill material into waters of the United States. The term “waters” includes wetlands and non-wetland bodies of water that meet specific criteria as defined in the Code of Federal Regulations. All three of the identified technical parameters (hydrology, soils, and vegetation) must be met for an area to be identified as a wetland under USACE CWA Section 404 jurisdiction, unless the area has been modified by human activity. In general, a permit must be obtained before the discharge of dredged or fill material can be placed in wetlands or other waters of the United States. The USACE at its discretion issues several types of permits (Nationwide, Individual, or General) depending on the acreage and purpose of discharge of fill or dredged material into waters of the United States.

The USACE and Environmental Protection Agency (EPA) have issued a set of guidance documents detailing the process for determining Clean Water Act Jurisdiction following the U.S. Supreme Court’s decision in *Rapanos v. United States* and *Carabell v. United States* (herein

referred to simply as “Rapanos”). The EPA and USACE issued a summary memorandum of the guidance for implementing the Supreme Court’s decision in Rapanos that addresses the jurisdiction over waters of the United States under the Clean Water Act. The complete set of guidance documents summarized as key points below, are used for evaluation by the EPA and the USACE to determine Clean Water Act jurisdiction over potential waters of the U.S. including wetlands and to complete the “significant nexus test” as detailed in the guidelines and the USACE Approved Jurisdictional Determination Form.

The significant nexus test includes consideration of hydrologic and ecologic factors. For circumstances in situations (B) below the significant nexus test would take into account physical indicators of flow (evidence of an Ordinary High Water Mark; OHWM), if a hydrologic connection to a traditional navigable water exists, and if the aquatic functions of the water body has a significant effect (more than speculative or insubstantial) on the chemical, physical, and biological integrity of a traditional navigable water. The USACE and EPA will apply the significant nexus standard to assess the flow characteristics and functions of potential waters of the U.S. to determine if it significantly affects the chemical, physical and biological integrity of downstream traditional navigable waters.

Rapanos Key Points Summary

(A) The USACE and EPA will assert jurisdiction over the following waters:

- Traditional navigable waters. The EPA and USACE Clean Water Act jurisdiction following the U.S. Supreme Court’s Rapanos Decision affirms that EPA and the USACE will continue to assert jurisdiction over Traditional Navigable Waters (TNWs) that are defined as, “All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.”
- Wetlands adjacent to traditional navigable waters.
- Non-navigable tributaries of traditional navigable waters that are relatively permanent (Relatively Permanent Waters; RPWs) where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months).
- Wetlands that directly abut such tributaries.

(B) The USACE and EPA will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water:

- Non-navigable tributaries that are not relatively permanent.
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent.
- Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary.

(C) The USACE and EPA generally will not assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow).
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

3.3.1.4 Clean Water Act Section 401 Water Quality Certification and State Waste Discharge Permit under the Porter-Cologne Act

The State of California (State) regulates water quality related to discharge of fill material into waters of the U.S. pursuant to Section 401 of the Clean Water Act. Section 401 compliance is a federal mandate regulated by the State. The local Regional Water Quality Control Boards (RWQCB) have jurisdiction over all those areas defined as jurisdictional under Section 404 of the CWA. Where a 404 permit is required, a 401 water quality certification from the RWQCB is also required.

In addition, the State regulates water quality for all waters of the State, that may also include isolated wetlands as defined under the California Porter-Cologne Water Quality Control Act (Porter Cologne; Ca. Water Code, Div. 7, §13000 et seq.). The State 401 Certification Program regulates all discharges that can affect water quality, even if there is no significant nexus to a traditional navigable water body required for USACE determination of jurisdiction over waters of the United States. In such instances, a Waste Discharge Permit is required even though federal Clean Water Act Section 401 water quality certification or 404 permits are not required.

3.3.1.5 California Fish and Game Code Section 1602 Lake and Streambed Alteration Agreement

Jurisdictional authority of the CDFG over the bed, bank, or channel of a river, stream, or lake is established under Section 1600 *et. seq.* of the California Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The Fish and Game Code stipulates that it is unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream, or lake resulting in a substantial effect on a fish or wildlife resource without notifying the CDFG and completing the Streambed Alteration Agreement process.

3.3.2 Local Regulations and Policies

3.3.2.1 Woollystar Preservation Area

The Woollystar Preservation Area (WSPA) was established in 1998 by the USACE and local sponsors as mitigation for the construction of the Seven Oaks Dam upstream on the Santa Ana River. The WSPA is managed by an oversight committee made up of the USACE, and three flood control districts for San Bernardino County, Riverside County, and Orange County. It includes over 700 acres of alluvial fan scrub in the Santa Ana River wash downstream of Seven Oaks Dam

(City of Highland, 2006). The Santa Ana woolly star is a federally endangered and state endangered plant that only occurs along the Santa Ana River. **Figure 3.3-1** identifies the WSPA within the project area.

3.3.2.2 Land Management and Habitat Conservation Plan for the Upper Santa Ana River Wash (“Plan B”)

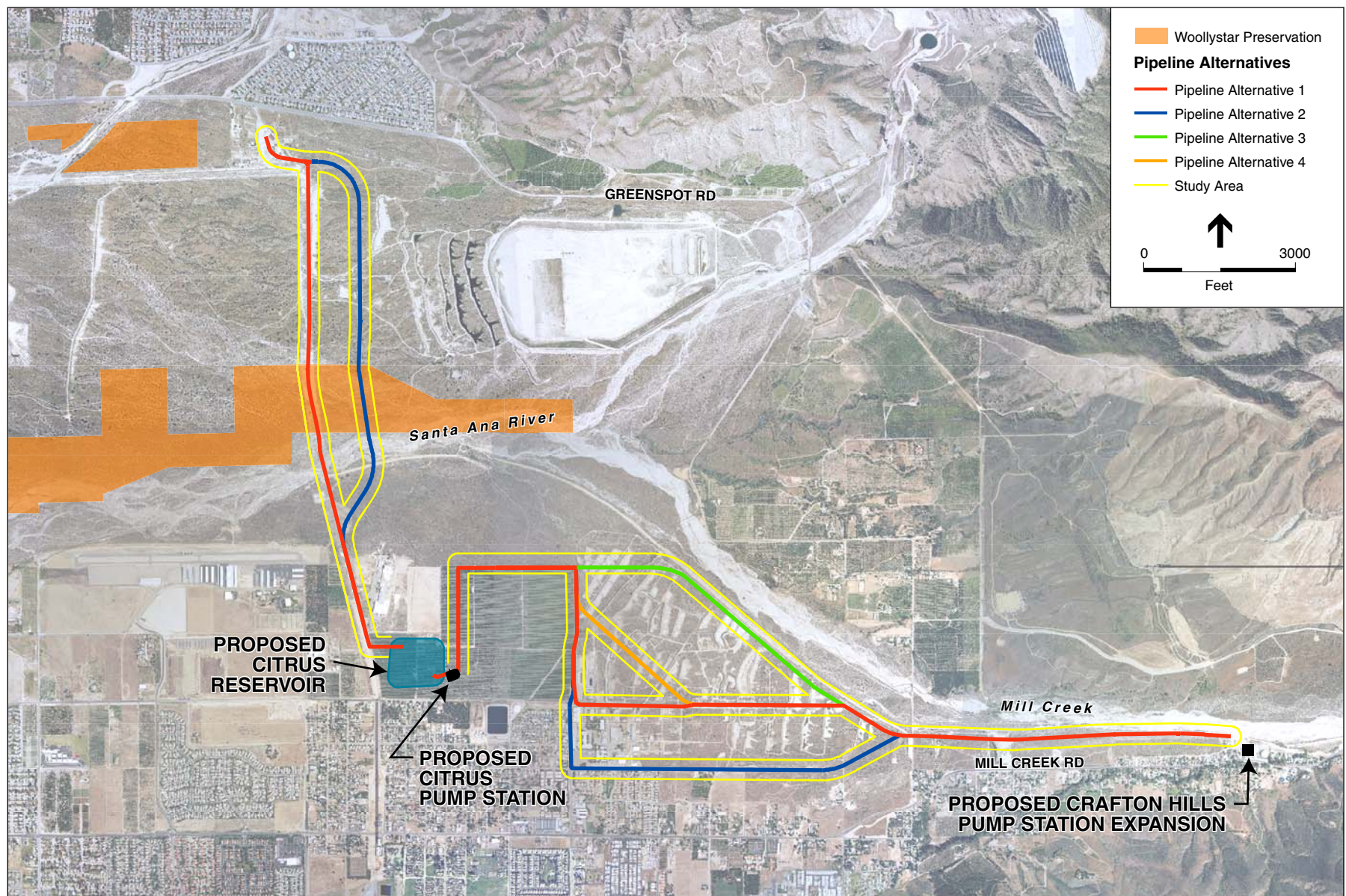
The SBVWCD is the lead agency on the Santa Ana River wash Land Management and Habitat Conservation Plan (the Plan, referred to in some documents as “Plan B.”). The Plan is a cooperative effort among SBVWCD, other local agencies, corporations, CEMEX USA and Robertson’s Ready Mix, and the Bureau of Land Management (BLM) to appropriately manage the area’s biological, mineral, and water resources. There are essentially two fronts to plan implementation: (1) a land exchange; and (2) establishment of a conservation area. The proposed land exchange would occur between BLM and SBVWCD. Currently, SBVWCD owns land in the Santa Ana River wash that is leased to CEMEX USA and Robertson’s Ready Mix for sand and gravel mining operations. BLM owns land in the Santa Ana River wash that has been designated as an Area of Critical Environmental Concern (ACEC). The Plan proposes to transfer land ownership and associated mining leases of SBVWCD land to the BLM in exchange for the ACEC land, which would then be rolled into a formal Habitat Conservation Plan area. The land exchange requires an amendment to the BLM’s 1994 Management Plan for the area. A Notice of Intent to amend the 1994 plan was published in 2004. A Notice of Availability for a Draft Environmental Impact Statement (EIS)/EIR on the proposed plan amendments was published on March 24, 2008. Once the land exchange occurs, the USFWS and the CDFG would need to approve the newly-acquired, former-ACEC land as a formal Habitat Conservation Plan area under the jurisdiction of SBVWCD.

3.3.3 Environmental Setting

3.3.3.1 Methodology

Vegetation types and wildlife habitats were characterized on the basis of accepted classification systems and field observations. Biological reconnaissance-level surveys and focused species specific protocol surveys of the proposed project alternative alignments were conducted from the spring through the fall of 2007 that are discussed in detail in a Biotechnical Report (Chambers Group Inc., 2007 included in **Appendix C**). The surveys were designed to gather background information on vegetative communities, wildlife habitats and habitat use, and wetlands within and adjacent to the alternative alignments, and to verify the results of previous surveys and reports. Vegetation types and wildlife habitats were mapped during the surveys and augmented through interpretation of aerial photography¹. Prior to the surveys, the following sources were consulted for information on biological resources within the project area:

- Special status species records from the California Natural Diversity Database (CNDDDB, 2007); The CNDDDB provides a list of special-status plant and wildlife species that have been recorded in the vicinity of the project site to focus the field survey effort and



SOURCE: GlobeXplorer, 2007; SBVWCD, 2007.

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Figure 3.3-1
Woollystar Preservation Area

project analysis on specific plant or wildlife issues with historic and current recorded occurrences in the region.

- Special status plant records from the California Native Plant Society Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2007);
- USFWS list of potential threatened or endangered Species for the study area;
- Biological resources survey report for portions of Alternative Alignments 1 and 2 (P&D Consultants, 2005);
- Focused surveys for sensitive bird species of Alternative Alignments 1, 2, and 3 (Pacific Coast Conservation Alliance, 2006); and
- Focused surveys for sensitive plant species on portions of Alternative Alignments 1 and 2 (Aspen Environmental Group, 2006).
- Protocol San Bernardino kangaroo rat surveys within portions of Alternative Alignments 1 and 2 east of Crafton Avenue (Davenport, 2007).

Descriptions of plant communities in the project area generally follow the vegetation classification systems of the Holland (1986) and Sawyer and Keeler-Wolf (1995). In some cases, vegetation patterns were mapped at a finer scale where it was appropriate for the purpose of evaluating habitat suitability and quality for special-status species. In such cases, such as the scrub habitats associated with alluvial soils, the sources for classifying these types are cited. The vegetation types generally correlate with wildlife habitat types.

3.3.3.2 Regional Setting

The proposed site is located in San Bernardino County. The project includes areas within the cities of Highland, Redlands and unincorporated San Bernardino County including the community of Mentone. The San Bernardino National Forest is north and east of the City of Highland and the community of Mentone. The Crafton Hills are south of the proposed corridors and east of Mentone. The elevation within the study area ranges from approximately 1,600-2,200 feet. A major portion of the project is in the Santa Ana River wash, and the project area includes alluvial fan areas of the Santa Ana River and Mill Creek. The biological resources in the Santa Ana River watershed are diverse; however, the vegetation and habitat types within the area of potential project effects are dominated mostly by Riversidian alluvial fan sage scrub (RAFSS), a CDFG designated sensitive plant community that is habitat for several special-status plant and wildlife species.

3.3.3.3 Local Setting

Vegetation and Wildlife Habitats

Vegetation types within the project area as mapped during surveys conducted in 2007 (see Appendix C) are shown on **Figure 3.3-2**, and are summarized below.

Riversidian Alluvial Fan Sage Scrub

RAFSS vegetation communities occur on alluvial outwash fans along the base of the San Gabriel, San Bernardino, and San Jacinto mountains. RAFSS communities are generally associated with infrequently scoured areas on floodplains and outwash fans in the Transverse and Peninsular ranges (Holland, 1986), and are considered natural communities of special concern by the CDFG as they are highly fragmented due to urbanization and the extensive alteration of natural stream hydrology in southern California and are known to support habitat for special-status species. RAFSS communities are composed of a variety of evergreen woody and drought-deciduous shrubs (similar to those common in coastal sage scrub communities) with a significant component of larger, evergreen shrubs typically found in chaparral (Kirkpatrick and Hutchinson, 1977; Smith, 1980), and the species present in this vegetation association reestablish following intense periodic flooding events. Three seral stages² (pioneer, intermediate, and mature) of RAFSS have been described based on the frequency and intensity of these flooding events (Smith, 1980; Hanes *et al.*, 1989), and are described separately below. Scalebroom is considered to be an indicator species of alluvial scrubs and is usually described as a dominant or subdominant shrub in alluvial community descriptions, including the scalebroom series of Sawyer and Keeler-Wolf (1995) and the *Lepidospartum-Eriodictyon-Yucca* association described by Kirkpatrick and Hutchinson (1977).

Pioneer and Disturbed RAFSS

Pioneer RAFSS is the earliest seral stage of RAFSS. Vegetative cover within this seral stage is lowest of the three stages, and soils contain the greatest percentage of sand particles of the three stages (Smith, 1980; Hanes *et al.*, 1989). Within the project area, this vegetation association occurs within the active flood channels of the Santa Ana River and Mill Creek. Pioneer RAFSS vegetation is associated with natural flood events. Disturbed pioneer RAFSS is associated with recovery following human related disturbance, such as clearing and grading. Soils can be characterized as coarse, sandy riverwash, typical of southern California floodplains, with a vegetative cover less than approximately 20 percent.

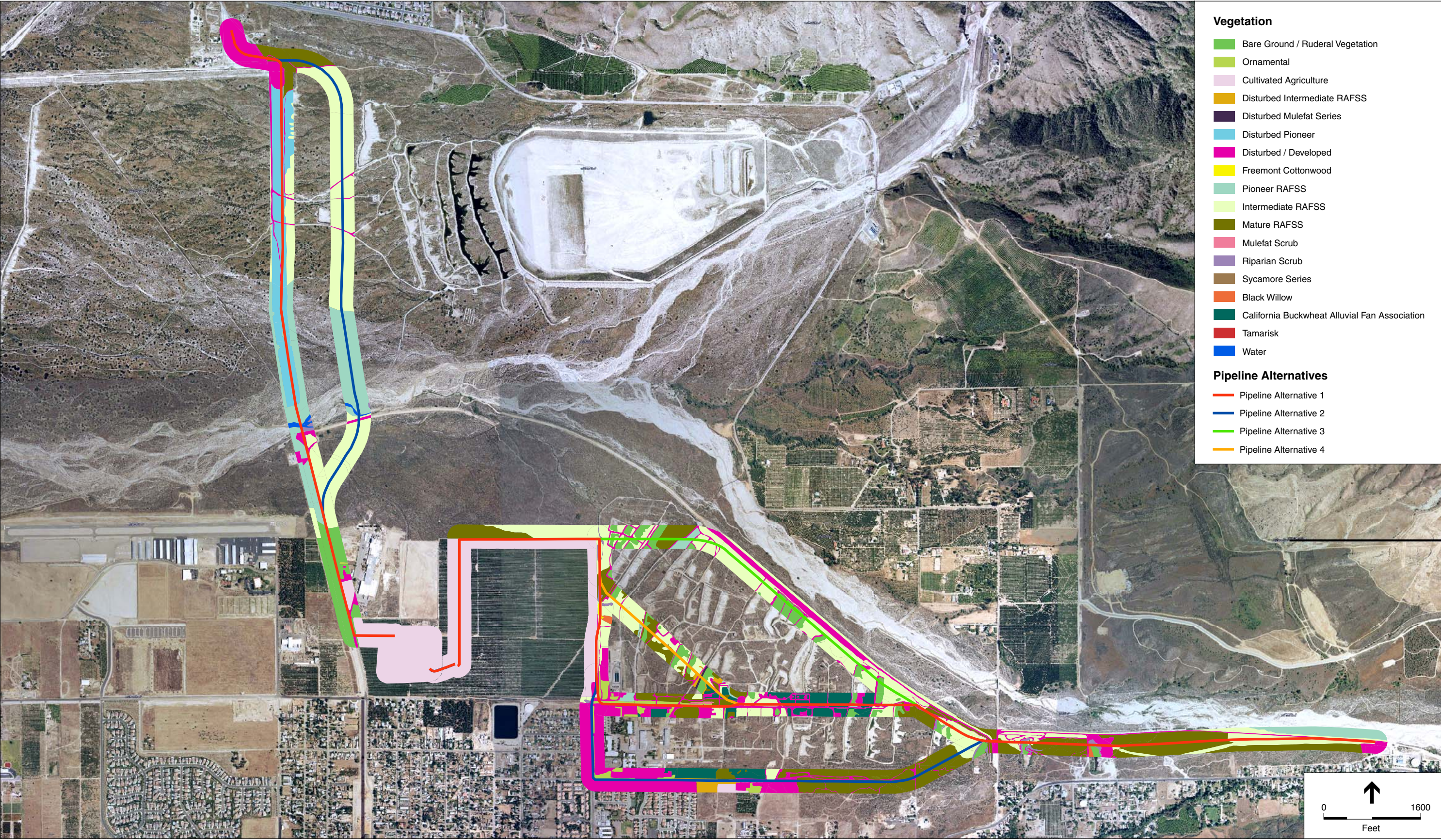
Intermediate RAFSS

Intermediate RAFSS is a seral stage of RAFSS that is subjected to infrequent flooding events (Smith, 1980; Hanes *et al.*, 1989). Within the project area, this vegetation association occurs between the active flood channels and terraces of the Santa Ana River and Mill Creek. Soils are mainly gravelly, coarse alluvium with approximately 50 percent vegetative cover.

Mature RAFSS

Mature RAFSS is a seral stage of RAFSS that is rarely subject to flooding due to the distance to active floodplains (Smith, 1980). Within the project area, mature RAFSS dominates within the elevated terraces adjacent to the flood channels of the Santa Ana River and Mill Creek. Soils are

² Seral stages (also called *successional* stages) refer to the recognition of sub-types of a generalized vegetation type, and correspond to how old or well established the dominant species are in relation to species that colonize following a disturbance, such as flood or fire.



SOURCE: Chambers Group, 2007.

Figure 3.3-2
Vegetation Map

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mainly gravelly, coarse alluvium with the presence of cryptogamic crust containing soil, bacteria, lichens, and mosses that act as a living mulch to retain soil moisture and resist wind and water erosion. Vegetative cover is more than 50 percent.

California Buckwheat Alluvial Fan Association

The California buckwheat alluvial fan association described by Gordon and White (1994) is a type of RAFSS in which California buckwheat is dominant. Similar to what Sawyer and Keeler-Wolf (1995) refer to as the California Buckwheat Series and Intermediate or Mature RAFSS, this community is made up almost entirely of shrubs less than one meter in height and consists of a continuous to intermittent canopy. Vegetative cover is moderate with cover ranging from 20 to 50 percent.

Riparian Scrub

Riparian habitats occur along drainages or adjacent to standing water. Riparian Scrub communities are dense, broadleaved, winter-deciduous riparian thickets dominated by several species of willow (*Salix* spp.), with scattered Fremont cottonwood (*Populus fremontii*) and western sycamore (*Platanus racemosa*) often intermixed with mule fat (*Baccharis salicifolia*). Loose, sandy or fine gravelly alluvium deposited near stream channels during flood flows characterizes the soils of this community (Holland, 1986). Riparian Scrub most closely matches the mixed willow series described by Sawyer and Keeler-Wolf (1995) and southern willow scrub described by Holland (1986).

Developed/Ornamental

Developed areas are areas that have been altered by human activity and now display man-made structures such as houses, paved roads, buildings, parks, and other maintained areas. Ornamental landscaping composed of non-native plant species is maintained in much of the developed areas along the corridor. Typically, ornamental landscaping includes areas where vegetation is dominated by non-native, horticultural plants, but native vegetation can also be planted in these areas.

Wildlife Movement Corridors

The concept of habitat corridors addresses the linkage between large blocks of habitat that allow the safe movement of mammals and other ground dwelling wildlife species, birds, and invertebrates from one habitat area to another. The definition of a corridor is varied, but corridors may include such areas as greenbelts, refuge systems, underpasses, and biogeographic landbridges, for example. In general, a corridor is described as a linear habitat, embedded in a dissimilar matrix that connects two or more large blocks of habitat. Wildlife movement corridors are critical for the survivorship of ecological systems for several reasons. Corridors can connect water, food, and cover sources, spatially linking these three resources with wildlife in different areas. In addition, wildlife movement between habitat areas provides for the potential of genetic exchange between wildlife species populations, thereby maintaining genetic variability and adaptability to maximize the success of wildlife responses to changing environmental conditions. This is especially critical for small populations subject to loss of variability from genetic drift and

effects of inbreeding. The nature of corridor use and wildlife movement patterns varies greatly among species and geographic regions.

Watersheds and drainages generally serve as movement corridors because wildlife can move easily through these areas, and fresh water is available. Corridors also offer wildlife unobstructed terrain to forage in and for the dispersal of young individuals. Movement corridors are particularly important to larger terrestrial species, such as mountain lions (*Felis concolor*), coyotes (*Canis latrans*), bobcats (*Lynx rufus*), and mule deer (*Odocoileus hemionus*) due to the protective cover afforded by dense vegetation.

A number of species known to use wildlife corridors, including coyote and mountain lion, have been detected on the project site (Chambers, 2007). The Santa Ana River wash and its tributary Mill Creek provide a significant wildlife corridor in an increasingly urbanized region. They provide connective corridors between areas of the San Bernardino National Forest, on the north and east, and Crafton Hills to the South.

Jurisdictional Waters of the U.S., Waters of the State, and Wetlands

The active channel of the Santa Ana River, comprising an approximately 500-foot wide corridor across Alternative Alignments 1 and 2, is a waters of the U.S. and waters of the State that is subject to jurisdiction of the U.S. Army USACE of Engineers, California Department of Fish and Game, and the Regional Water Quality Control Board (see complete jurisdictional determination in Appendix C). Flow volume and timing of flow varies with precipitation, Mill Creek flows, and controlled releases from Seven Oaks Dam, and although the river does not always contain water year-round, it would likely be considered a “*relatively permanent water*” subject to USACE jurisdiction according to recent guidance on the extent of federal jurisdiction as it flows for at least three months each year. The correlation between vegetative indicators and the presence of established channel banks remain as the most reliable indicators of the limit of federal jurisdiction across the Santa Ana River floodplain. A formal delineation of jurisdictional wetlands and waters has been prepared as part of the project (see Appendix C) and will be subject to verification and final jurisdictional determination by the USACE.

Other drainages within the project area include alluvial fan/wash channels that may carry water during heavy rain events, and channels that have been modified to transport water among the percolation basins within the Santa Ana River and Mill Creek alluvial fan/wash system (**Figure 3.3-3**). Based on the USACE Arid West Supplement (USACE, 2007) to the 1987 Wetlands Manual (USACE, 1987), and the recent USACE-EPA “Rapanos” guidance, many of the smaller ephemeral drainages within the project area do not meet the criteria of federal jurisdictional waters, although they may be considered waters of the State subject to regulatory authority of the Regional Water Resource Control Board (under the Porter-Cologne Act) and the California Department of Fish and game (under Section 1602 of the Fish and Game Code). There are some relatively permanent waters that flow for more than three months per year, which continue to be regulated by the USACE under the Clean Water Act. These are shown on Figure 3.3-3. The federal jurisdictional determination will be decided by the USACE, based on the Jurisdictional Delineation prepared for this project (see Appendix C).



SOURCE: Chambers Group, 2007.

Figure 3.3-3
Jurisdictional Waters
of the U.S.

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Special-Status Species

For the purpose of this EIR, special status species also includes those plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered by the USFWS or the NMFS under the federal Endangered Species Act; those considered “species of concern” by the USFWS; those listed or proposed for listing as rare, threatened, or endangered by the CDFG under the CESA; animals designated as “Species of Special Concern” by the CDFG.

The CDFG has designated “Species of Special Concern” (SSC) as a species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria:

- Is extirpated from the State or, in the case of birds, is extirpated in its primary seasonal or breeding role;
- Is listed as Federal but not State threatened or endangered species and meets the State definition of threatened or endangered but has not been formally listed by the State.
- Is experiencing, or formerly experienced, serious (non-cyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status;
- Has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.
- Depends on a habitat that has shown substantial historical or recent declines in size and/or quality or integrity. This criterion infers the population viability of a species based on trends in the habitats in which it specializes.

Special-status species evaluated for this project also includes animals on several conservation organization’s watch lists of species in decline, and plants occurring on the California Native Plant Society (CNPS) List 1B, 2, and 4 tracked in the CNPS *Inventory of Rare and Endangered Vascular Plants of California* (see CNPS list description in footnotes on Table 3.3-2).

A special status species is considered to potentially occur in the project area if its known geographic range includes part of the project area or adjacent parcels and/or if the general habitat requirements or environmental conditions (e.g., soil type, etc.) required for the species are present within the corridors at the time of the survey. The actual and potential for special-status species to occur within the project area was evaluated for the project by incorporating the results of prior surveys as well as the reconnaissance-level and focused protocol level surveys conducted by Chambers in 2007 (P & D 2005, Aspen 2006, PCCA 2006, Chambers 2007). Special-status species occurrences actually identified in the project area by these comprehensive surveys are shown in **Table 3.3-1**. The following sections provide descriptions for each of the special-status plants and wildlife that may occur either currently or historically on or near the project site.

**TABLE 3.3-1
SPECIAL STATUS SPECIES ACTUALLY OBSERVED IN THE EBX PROJECT ALIGNMENTS**

Scientific Name Common Name	Alternative Alignment 1	Alternative Alignment 2	Alternative Alignment 3	Alternative Alignment 4
Federal and State-Listed Plant Species				
<i>Dodecahema leptoceras</i> slender-horned spineflower	X			
<i>Eriastrum densiflorum</i> ssp. <i>Sanctorum</i> Santa Ana River woollystar	X	X		
Other Special-Status Plant Species				
<i>Calochortus plummerae</i> Plummer's mariposa lily	X	X	X	
<i>Chorizanthe parryi</i> var. <i>parryi</i> Parry's spineflower	X	X	X	X
Federal and State-Listed Animal Species				
<i>Dipodomys merriami parvus</i> San Bernardino kangaroo rat	X			
<i>Elanus leucurus</i> White-tailed kite	X			X
<i>Polioptila californica californica</i> coastal California gnatcatcher	X	X		X
Other Special-Status Animal Species				
<i>Thamnophis hammondi</i> two-striped garter snake	X	X		
<i>Aimophila ruficeps canescens</i> southern California rufous-crowned sparrow	X	X	X	
<i>Ardea herodias</i> great blue heron (rookery site)	X ¹			
<i>Carduelis Lawrence</i> Lawrence's goldfinch	X		X	
<i>Chaetura vaux</i> Vaux's swift	X ²			
<i>Circus cyaneus</i> Northern harrier		X		
<i>Dendroica petechia brewsteri</i> yellow warbler			X	
<i>Egretta thula</i> Snowy egret	X ¹			
<i>Lanius ludovicianus</i> loggerhead shrike	X	X		
<i>Pelecanus erythrorhynchos</i> American white pelican	X ³	X ³		
<i>Spizella breweri</i> Brewer's sparrow	X			X
<i>Chaetodipus (=Perognathus) fallax fallax</i> northwestern San Diego pocket mouse	X	X		

¹ Foraging, no rookeries onsite

² Migrating

³ Migrating, no nesting colonies onsite

SOURCE: ESA, 2008, based in site surveys

Special-Status Plants

A total of twenty special-status plant species are known to occur currently or historically within the vicinity of the project site (CNDDDB 2007, CNPSEI 2007) and five of these twenty are federal or state-listed species (**Table 3.3-2**). These species are briefly discussed below and in Table 3.3-2. More detailed information for identified special-status species can be found in Appendix C.

Nine of the twenty special-status plant species and two federally or state-listed species that were listed on the CNDDDB data-base search are assumed absent from the project site for reasons described below. The bird-foot checkerbloom (*Sidalcea pedata*), a federally and state-listed endangered species, and Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*), a federal candidate and state listed rare species require habitats and elevations not found within the project area. Therefore, these species are assumed absent from all four pipeline alternative alignments.

San Bernardino Mountains owl's clover (*Castilleja lasiorhyncha*) Parish's alumroot (*Heuchera parishii*), silver-haired ivesia (*Ivesia argyrocoma*), lemon lily (*Lilium parryi*), Hall's monardella (*Monardella macrantha* ssp. *hallii*), Parish's yampah (*Perideridia parishii* ssp. *parishii*), Parish's gooseberry (*Ribes divaricatum* var. *parishii*), southern jewel-flower (*Streptanthus campestris*), and the Sonoran maiden fern (*Thelypteris puberula* var. *sonorensis*) are CNPS list 1 and 2 species which are assumed absent from the project site, since all four pipeline alternative alignments are well below the elevation range required for these species to persist and suitable habitat within these areas is not present.

Nine of the twenty special-status plant species were confirmed present or have the potential to occur within the project area including three federal or state listed species. Federal and state-listed plant species, those recorded or observed onsite (including CNPS list species), and those with the potential to occur along the pipeline alternative alignments are described below.

Nevin's barberry (*Berberis nevinii*) is a federally and state-listed endangered species that blooms from March through April. This evergreen shrub typically occurs in chaparral, cismontane woodland, coastal sage scrub, and riparian scrub, on steep, north-facing slopes or in low-grade sandy washes on gravelly soils from 950 to 2,705 feet in elevation. This species is threatened by habitat loss associated with development and road maintenance. Many historical occurrences of Nevin's barberry have been extirpated.

Marginally suitable habitat exists for this species along the four pipeline alternative alignments. Many historical occurrences of Nevin's barberry have been extirpated, none of which have been reported within five miles of the four pipeline alternative alignments. Since marginally suitable habitat is found over most of the project site, this species has a low potential for occurrence, although it has not been observed during any of the focused surveys of the project alternative alignments.

Slender-horned spineflower (*Dodecahema leptoceras*) is a federally and state-listed endangered species that blooms from April through June. This annual herb occurs in chaparral, cismontane woodlands, and coastal scrub, particularly alluvial fan sage scrub, on flood-deposited terraces and washes from 660 to 2,495 feet in elevation. This species is threatened by habitat loss associated with development, flood control projects, and vehicle use.

**TABLE 3.3-2
SPECIAL STATUS PLANTS OBSERVED OR POTENTIALLY OCCURRING IN THE EBX PROJECT AREA**

Scientific Name Common Name	Status	Flowering Period	Potential for Occurrence*
Federal and State-Listed Plant Species			
<i>Berberis nevinii</i> Nevin's barberry	USFWS: CDFG: CNPS: S-Rank: G-Rank:	FE SE 1B.1 S2.2 G2	Mar – Apr Alt 1 2, 3 & 4: Low
<i>Dodecahema leptoceras</i> slender-horned spineflower	USFWS: CDFG: CNPS: S-Rank: G-Rank:	FE SE 1B.1 S1.1 G2	Apr – Jun Alt 1: Present Alt 2, 3 & 4: High
<i>Eriastrum densiflorum ssp. sanctorum</i> Santa Ana River woollystar	USFWS: CDFG: CNPS: S-Rank: G-Rank:	FE SE 1B.1 S1.1 G4T1	Jun – Sep Alt 1 & 2: Present Alt 3 & 4: Moderate
<i>Sidalcea hickmanii ssp. parishii</i> Parish's checkerbloom	USFWS: CDFG: CNPS: S-Rank: G-Rank:	FC Rare 1B.2 S1.2 G3T1	Jun – Aug Alt 1, 2, 3 & 4: Assumed Absent
<i>Sidalcea pedata</i> bird-foot checkerbloom	USFWS: CDFG: CNPS: S-Rank: G-Rank:	FE SE 1B.1 S1.1 G1	May – Aug Alt 1, 2, 3 & 4: Assumed Absent
Other Special-Status Plant Species			
<i>Calochortus plummerae</i> Plummer's mariposa lily	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 1B.2 S3.2 G3	May – Jul Alt 1 2 & 3: Present Alt 4: High
<i>Castilleja lasiorhyncha</i> San Bernardino Mountains owl's clover	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 1B.2 S2.2 G3	Jun – Aug Alt 1, 2, 3 & 4: Assumed Absent
<i>Centromadia pungens ssp. laevis</i> smooth tarplant	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 1B.1 S2.1 G3G4T2	Apr – Sep Alt 1 & 2: Low Alt 3 & 4: Assumed Absent
<i>Chorizanthe parryi var. parryi</i> Parry's spineflower	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 3.2 S2.1 G2T2	Apr – Jun Alt 1, 2, 3 & 4: Present

TABLE 3.3-2 (Continued)
SPECIAL STATUS PLANTS OBSERVED OR POTENTIALLY OCCURRING IN THE EBX PROJECT AREA

Scientific Name Common Name	Status		Flowering Period	Potential for Occurrence*
<i>Heuchera parishii</i> Parish's alumroot	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 1B.3 S2.3 G2	June – Aug	Alt 1, 2, 3 & 4: Assumed Absent
<i>Imperata brevifolia</i> California satintail	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 2.1 S2.1 G2	Sept – May	Alt 1 & 2: Moderate Alt 3 & 4: Assumed Absent
<i>Ivesia argyrocoma</i> silver-haired ivesia	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 1B.2 S2.2 G2	Jun – Aug	Alt 1, 2, 3 & 4: Assumed Absent
<i>Lepidium virginicum</i> var. <i>robinsoni</i> Robinson's pepper-grass	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 1B.2 S2.2 G5T2	Jan – Jul	Alt 1 2, 3, & 4: Moderate
<i>Lilium parryi</i> lemon lily	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 1B.2 S2.1 G3	Jul – Aug	Alt 1, 2, 3 & 4: Assumed Absent
<i>Malacothamnus parishii</i> Parish's bush mallow	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 1A SH GHQ	Jun – Jul	Alt 1 & 2: Low Alt 3 & 4: Assumed Absent
<i>Monardella macrantha</i> ssp. <i>hallii</i> Hall's monardella	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 1B.3 S3.3 G5T3	Jun – Aug	Alt 1 2, 3 & 4: Assumed absent
<i>Perideridia parishii</i> ssp. <i>parishii</i> Parish's yampah	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 2.2 S2.2 G4T3T4	Jun – Aug	Alt 1, 2, 3 & 4: Assumed Absent
<i>Ribes divaricatum</i> var. <i>parishii</i> Parish's gooseberry	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 1A SH G4TH	Feb – Apr	Alt 1 2, 3 & 4: Assumed Absent
<i>Streptanthus campestris</i> southern jewel-flower	USFWS: CDFG: CNPS: S-Rank: G-Rank:	None None 1B.3 S2.3 G2	May – Jul	Alt 1, 2, 3 & 4: Assumed Absent

TABLE 3.3-2 (Continued)
SPECIAL STATUS PLANTS OBSERVED OR POTENTIALLY OCCURRING IN THE EBX PROJECT AREA

Scientific Name Common Name	Status		Flowering Period	Potential for Occurrence*
<i>Thelypteris puberula</i> var. <i>sonorensis</i> Sonoran maiden fern	USFWS:	None	Jan – Sep	Alt 1 2, 3 & 4: Assumed Absent
	CDFG:	None		
	CNPS:	2.2		
	S-Rank:	S2.2		
	G-Rank:	G5T3		

Federal designations: (Federal Endangered Species Act, USFWS):

- FE: Federal-listed, endangered.
- FT: Federal-listed, threatened.
- PTH: Federal-listed, proposed-threatened
- FC: Candidate species.

State designations: (California Endangered Species Act, CDFG)

- SE: State-listed, endangered.
- ST: State-listed, threatened.
- Rare: State-listed as rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)

California Native Plant Society (CNPS) designations: (Note: According to CNPS [Skinner and Pavlik 1994], plants on Lists 1B and 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California Fish and Game Code. This interpretation is inconsistent with other definitions.

- List 1A: Plants presumed extinct in California.
- List 1B: Plants rare and endangered in California and throughout their range.
- List 2: Plants rare, threatened or endangered in California but more commons elsewhere in their range.
- List 3: Plants about which we need more information; a review list.
- List 4: Plants of limited distribution; a watch list.
- List Extension 0.1: Seriously endangered in California (over 80% of occurrences threatened/ high degree and immediacy of threat)
- List Extension 0.2: Fairly endangered in California (20-80% occurrences threatened)
- List Extension 0.3: Not very endangered in California (<20% of occurrences threatened)

California Natural Diversity Database (CNDDB) Global (G) and State (S) ranking designations:

- G1: Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals OR less than 2,000 acres.
- G2: 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres.
- G3: 21-80 EOs OR 3,000-10,000 individuals OR 10,000-50,000 acres.
- G4: Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; (i.e., there is some threat, or somewhat narrow habitat).
- G5: Population or stand demonstrably secure to ineradicable due to being commonly found in the world.
- GH: All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists (SH = All California sites are historical).
- GX: All sites are extirpated; this element is extinct in the wild (SX = All California sites are extirpated).
- GXC: The element is very rare, but there are taxonomic questions associated with it.
- G1Q: Applies to a subspecies or variety.
- T:
- S1: Less than 6 EOs OR less than 1,000 individuals OR less than 2,000 acres
- S2: 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres
- S3: 21-80 EOs or 3,000-10,000 individuals OR 10,000-50,000 acres
- S4: Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat. NO THREAT RANK.
- S5: Demonstrably secure to ineradicable in California. NO THREAT RANK.
- S5: Very threatened
- Extension 0.1: Threatened
- Extension 0.2: No current threats known
- Extension 0.3:

* All species have been confirmed ABSENT from the proposed Citrus Reservoir and Citrus Pump Station

SOURCE: California Natural Diversity Data Base (CNDDB) and California Native Plant Society Electronic Inventory (CNPSEI) for Yucaipa, Redlands, Harrison Mountain, and Keller Peak 7.5 minute USGS quadrangles, 2007.

Slender-horned spineflower was mapped by Aspen (2006) along Alternative Alignment 1 and was also confirmed present along Alternative Alignment 1 in 2007 (Chambers 2007). It has the potential to occur along Alternative Alignments 2, 3 and 4 due to the presence of suitable habitat.

Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*) is a federally and state-listed endangered species. This perennial herb occurs in chaparral and coastal scrub in sandy or gravelly soils, usually on alluvial terraces from 490 to 2,000 feet in elevation. This species is known from one extended, but fragmented, population, and it is threatened by habitat loss associated with development, sand and gravel mining, grazing, flood control projects, and competition from non-native invasive plants.

The Santa Ana River woollystar was previously mapped (Aspen 2006) along the north-south segments of Alternative Alignments 1 and 2 and was confirmed present along Alternative Alignments 1 and 2 in 2007 (Chambers 2007). It also has the potential to occur along the east-west pipeline segments due to the presence of suitable habitat.

Plummer's mariposa lily (*Calochortus plummerae*) is a CNPS list 1B.2 species. This annual herb occurs in chaparral, cismontane woodlands, coastal and alluvial sage scrubs, lower montane coniferous forest, and valley and foothill grasslands on granitic rocky soils at elevations between 330 and 5,560 feet in elevation.

Suitable habitat for the Plummer's mariposa lily is present on all four pipeline alternative alignments, and this species was confirmed present along Alternative Alignments 1, 2, and 3 (P & D 2005, Aspen 2006). The potential for this species to occur within Alternative Alignment 4 is high.

Smooth tarplant (*Centromadia pungens* ssp. *laevis*) is a CNPS list 1B.1 species. This annual herb occurs in chenopod scrub, meadows and seeps, playas, riparian woodlands, and valley and foothill grassland on alkaline soils at elevations between 0 and 1,575 feet elevation.

Minimally suitable habitat for this species exists within the north-south segments of Alternative Alignments 1 and 2. However, no occurrences of this species have been reported in the area; therefore, the potential for this species to occur within pipeline alignments is low. Suitable habitat for this species is not present within the east-west segments of pipeline since these alignments are above the elevation range for this species. Therefore, this species is assumed absent from east-west segments of each of the alignments.

Parry's spineflower (*Chorizanthe parryi* var. *parryi*) is a CNPS list 3.2 species. This annual herb occurs in open chaparral and coastal and alluvial sage scrub habitats on sandy or rocky soils at elevations between 130 and 5,600 feet in elevation.

This species was confirmed present on all four pipeline Alternative Alignments during reconnaissance and/or focused plant surveys (P & D 2005, Aspen 2006, Chambers 2007, Chambers 2007b).

California satintail (*Imperata brevifolia*) is a CNPS list 2.1 species. This perennial herb occurs in chaparral, coastal sage scrub, alluvial sage scrub, Mojave Desert scrub, meadows and seeps, and riparian scrub on mesic alkaline soils at elevations between 0 and 1,640 feet elevation.

Marginally suitable habitat exists for this species along the north-south segments of pipeline Alternative Alignments 1 and 2. However, no occurrences of this species have been reported in the vicinity of the proposed pipeline alignments. The east-west segments of the alternative alignments are above the elevation range of this species. Therefore, the possibility for this species to occur within the north-south segments of Alternatives 1 and 2 is low, and this species is assumed absent from the east-west segments.

Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*) is a CNPS list 1B.2 species. This annual herb occurs in chaparral and coastal and alluvial sage scrub communities in dry, open areas at elevations between 3 and 2,800 feet elevation.

Marginally suitable habitat exists for this species within the project area of all four pipeline alternative alignments, and historical records indicate that the species has been found within the vicinity of the project site. Therefore, the potential for this species to occur within the four pipeline alternative alignments is moderate.

Parish's bush mallow (*Malacothamnus parishii*) is a CNPS list 1A species. This deciduous shrub occurs in chaparral and sage scrub communities at elevations between 1,000 and 1,500 feet.

Marginally suitable habitat exists for this species within the north-south segments of pipeline Alternative Alignments 1 and 2, although historical records indicate that the species has not been found within the vicinity of the project site. Therefore, the potential for this species to occur within the north-south segments of Alternative Alignments 1 and 2 is low. The east-west segments of each of the pipeline alignments are above the elevation range for this species. Therefore, the species is assumed absent from the east-west segments.

Special-Status Wildlife

A total of 39 special-status wildlife species are known to occur either currently or historically within the vicinity of the project site (CNDDB 2007) (**Table 3.3-3**). Eleven of the 39 special-status wildlife species are federal or state-listed species. Twenty-five species are California Species of Concern. The remaining three species appear on various watch-lists in California and worldwide.

Seventeen of the 39 special-status wildlife species identified on the CNDDB data-base search have a low potential to occur or are assumed absent from the project site as described below. This includes seven federal and state-listed species and ten California Species of Concern. These species are noted in Table 3.3-3 and detailed information for these species can be found in Appendix C. The following paragraphs describe the potential for each of these species to occur on the proposed project site.

**TABLE 3.3-3
SPECIAL STATUS WILDLIFE OBSERVED OR POTENTIALLY
OCCURRING IN THE EBX PROJECT AREA**

Scientific Name Common Name	Status	Potential for Occurrence
FEDERAL AND STATE-LISTED SPECIES		
Fish		
<i>Catostomus santaanae</i> Santa Ana sucker	USFWS: FT CDFG: CSC	Assumed Absent
Reptiles & Amphibians		
<i>Charina bottae umbratica</i> southern rubber boa	USFWS: None CDFG: ST	Assumed Absent
<i>Rana aurora draytonii</i> California red-legged frog	USFWS: FT CDFG: CSC	Low
<i>Rana muscosa</i> mountain yellow-legged frog	USFWS: FE CDFG: CSC	Assumed Absent
Birds		
<i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo (nesting)	USFWS: FC CDFG: SE	Assumed Absent
<i>Elanus leucurus</i> White-tailed kite	USFWS: None CDFG: FPS	Present Alt 1 & 4
<i>Empidonax traillii extimus</i> southwestern willow flycatcher	USFWS: FE CDFG: SE	Assumed Absent
<i>Poliophtila californica californica</i> coastal California gnatcatcher	USFWS: FT CDFG: CSC	Present Alt 1 2 & 4
<i>Vireo bellii pusillus</i> least Bell's vireo (nesting)	USFWS: FE CDFG: SE	Assumed Absent
Mammals		
<i>Dipodomys merriami parvus</i> San Bernardino kangaroo rat	USFWS: FE CDFG: CSC	Present Alt 1
<i>Dipodomys stephensi</i> Stephens' kangaroo rat	USFWS: FE CDFG: ST	Assumed Absent; outside range
OTHER SPECIAL-STATUS SPECIES		
Fish		
<i>Rhinichthys osculus ssp. 3</i> Santa Ana speckled dace	USFWS: None CDFG: CSC	High
Reptiles		
<i>Anniella pulchra pulchra</i> silvery legless lizard	USFWS: None CDFG: CSC	Low
<i>Aspidoscelis hyperythra</i> orange-throated whiptail	USFWS: None CDFG: CSC	Moderate
<i>Lampropeltis zonata parvirubra</i> California mountain kingsnake (San Bernardino population)	USFWS: None CDFG: CSC	Low
<i>Phrynosoma coronatum blainvillii</i> coast (San Diego) horned lizard	USFWS: None CDFG: CSC	Moderate
<i>Thamnophis hammondi</i> two-striped garter snake	USFWS: None CDFG: CSC	Present Alt 1 & 2

TABLE 3.3-3 (Continued)
SPECIAL STATUS WILDLIFE OBSERVED OR POTENTIALLY
OCCURRING IN THE EBX PROJECT AREA

Scientific Name Common Name	Status	Potential for Occurrence
OTHER SPECIAL-STATUS SPECIES (cont.)		
Birds		
<i>Accipiter cooperii</i> Cooper's hawk	USFWS: None CDFG: CSC	Present Alt 1
<i>Aimophila ruficeps canescens</i> southern California rufous-crowned sparrow	USFWS: None CDFG: CSC	Present Alt 1, 2, & 3
<i>Ardea herodias</i> great blue heron (rookery site)	USFWS: None CDFG: None	Present (foraging, no rookeries onsite) Alt 1
<i>Athene cunicularia</i> burrowing owl	USFWS: None CDFG: CSC	Low
<i>Carduelis Lawrence</i> Lawrence's goldfinch	USFWS: None CDFG: CSC	Present Alt 1 & 3
<i>Chaetura vaux</i> Vaux's swift (nesting)	USFWS: None CDFG: CSC	Present (migrating) Alt 1
<i>Circus cyaneus</i> Northern harrier	USFWS: None CDFG: CSC	Present Alt 2
<i>Dendroica petechia brewsteri</i> yellow warbler	USFWS: None CDFG: CSC	Present Alt 3
<i>Egretta thula</i> Snowy egret (rookery site)	USFWS: None CDFG: None	Present Alt 1 (foraging, no rookeries onsite)
<i>Eremophila alpestris actia</i> California horned lark	USFWS: None CDFG: CSC	Low (breeding) High (winter resident)
<i>Icteria virens</i> yellow-breasted chat	USFWS: None CDFG: CSC	Assumed Absent
<i>Lanius ludovicianus</i> loggerhead shrike	USFWS: None CDFG: CSC	Present Alt 1 & 2
<i>Pelecanus erythrorhynchos</i> American white pelican (nesting colony)	USFWS: None CDFG: CSC	Present (migrating, no nesting colonies onsite) Alt 1 & 2
<i>Spizella breweri</i> Brewer's sparrow	USFWS: None CDFG: None	Present (wintering) Alt 1 & 4
<i>Campylorhynchus brunneicapillus</i> cactus wren	USFWS: None CDFG: CSC	Present (not likely this is not the coastal sub-species of concern) Alt 1
Mammals		
<i>Antrozous pallidus</i> pallid bat	USFWS: None CDFG: CSC	Moderate
<i>Chaetodipus (=Perognathus) fallax fallax</i> northwestern San Diego pocket mouse	USFWS: None CDFG: CSC	Present Alt 1 & 2
<i>Eumops perotis californicus</i> California western mastiff bat	USFWS: None CDFG: CSC	Moderate
<i>Glaucomys sabrinus californicus</i> San Bernardino flying squirrel	USFWS: None CDFG: CSC	Assumed Absent
<i>Nyctinopmops ferrosaccus</i> pocketed free-tailed bat	USFWS: None CDFG: CSC	Low
<i>Perognathus alticolus alticolus</i> white-eared pocket-mouse	USFWS: None CDFG: CSC	Assumed Absent

TABLE 3.3-3 (Continued)
SPECIAL STATUS WILDLIFE OBSERVED OR POTENTIALLY
OCCURRING IN THE EBX PROJECT AREA

Scientific Name Common Name	Status	Potential for Occurrence
OTHER SPECIAL-STATUS SPECIES (cont.)		
Mammals (cont.)		
<i>Perognathus longimembris brevinasus</i> Los Angeles pocket mouse	USFWS: None CDFG: CSC	Low
<i>Taxidea taxus</i> American badger	USFWS: None CDFG: CSC	Moderate

Notes:

Federal Designations (Federal Endangered Species Act, USFWS)

- FE Federal listed, endangered
- FT Federal listed, threatened

State Designations (California Endangered Species Act, CDFG)

- SE State listed, endangered
- ST State listed, threatened
- FPS Fully protected species
- CSC California Special Concern Species

SOURCE: CNDDB for Yucaipa, Redlands, Harrison Mountain, and Keller Peak 7.5 minute USGS quadrangles, 2007.

The **California red-legged frog** (*Rana aurora draytonii*) is federally threatened and a California Species of Concern. Only sub-marginal habitat for this species occurs in areas of Alternative Alignments 1, 2, 3, and 4, and historical records indicate that occurrences of this species in the area are ten miles away. Therefore, this species has a low potential to occur within the four alternative alignments and is assumed absent from the proposed Citrus Pump Station and Citrus Reservoir project areas. The **mountain yellow-legged frog** (*Rana muscosa*) is federally endangered and a California species of concern. Although riparian habitat exists along Alternative Alignments 1 and 2 at the Santa Ana River crossing and several other water features occur elsewhere, the project site does not contain the typical montane habitat of this species, and no known populations are known to exist near the project site. Therefore, this species is assumed absent from all four alternative alignments and the proposed pump station and reservoir.

The **southern rubber boa** (*Charina bottae umbratica*) is a state-listed threatened species. The suitable habitat required to support this species is not present on the project site and the elevation is well below that required by the species. Therefore, this species is assumed absent from the project site. The **silvery legless lizard** (*Anniella pulchra pulchra*) is a California Species of Concern. Although suitable substrates are found within the project site, these soils are generally drier than those preferred by the species and leaf litter concentrations are relatively few. In addition, this species is not currently known to occur within five miles of the project site; therefore, this species has a low potential to occur within the project site. The **San Bernardino Mountain kingsnake** (*Lampropeltis zonata parvirubra*) is a California Species of Concern. Although the habitats found onsite are marginally suitable for this species, the elevations and topography are generally not suitable for this species. The nearest known occurrence is over five miles from the project site; therefore, this species has a low potential to occur within the project site.

The **western yellow-billed cuckoo** (*Coccyzus americanus occidentalis*), a state-listed endangered species, and the **southwestern willow flycatcher** (*Empidonax traillii extimus*), a federally and state endangered species, are assumed absent from the project site. Riparian habitats suitable for the nesting of these species were not present on the project site at the time of the Chambers Group 2007 surveys. In addition, the PCCA 2006 protocol-level southwestern willow flycatcher survey was negative and the western yellow-billed cuckoo was not observed during these surveys. The **least Bell's vireo** (*Vireo bellii pusillus*) is a federally and state-listed endangered species. Although marginal breeding habitat can be found within the vicinity of the project area, the least Bell's vireo was not detected during the PCCA protocol surveys (2006). Therefore, this species is assumed to be absent from the project site. The **burrowing owl** (*Athene cunicularia*) is a California Species of Concern. Since the nearest known occurrence for this species is over five miles from the project site, and habitat is only marginally suitable in portions of the project site, this species has a low potential to occur within the project site. The **yellow breasted chat** (*Icteria virens*)(nesting) is a California Species of Concern. Due to a lack of substantial breeding habitat onsite, this species is assumed to be absent as a breeding species within the project site.

The **Stephen's kangaroo rat** (*Dipodomys stephensi*; SKR) is a federally endangered and state threatened species. Although habitat for this species exists along the project site, the project is located outside the known range of the species and it was not captured during protocol San Bernardino kangaroo rat trapping surveys conducted within portions of Alignments 1 and 2 east of Crafton Avenue. As such, the SKR is assumed absent from the project site (Davenport 2007). The project site is also located slightly outside of the known range for this species. The **San Bernardino flying squirrel** (*Glaucomys sabrinus californicus*) is a California Species of Concern. Since mature woodland habitats are sparse and disconnected from larger forest habitats, and elevations are generally lower than that which the species prefers, this species is considered absent from the project site. The **pocketed free-tailed bat** (*Nyctinomops femorosaccus*) is a California Species of Concern. This species is common in Mexico, but rare in California. There are no known occurrences within the vicinity of the project site. Any individuals detected onsite would likely be foraging or widely dispersing individuals. Potential roost sites are limited, but the old Lockheed structures (northeast of Crafton and Madera Avenues) along the central portion of the entire project site, where bat signs were observed during the Chambers Group bio-reconnaissance surveys provide the best roost opportunities for this species. The **white-eared pocket mouse** (*Perognathus alticolus alticolus*) is a California Species of Concern. The elevations are well below those known for this species, and the habitat types present within the project site are atypical; therefore, this species is assumed to be absent from the project site. In addition, this species was not captured during protocol San Bernardino kangaroo rat trapping surveys conducted within portions of Alignment 1 and 2 east of Crafton Avenue (Davenport 2007). The **Los Angeles pocket mouse** (*Perognathus longimembris brevinasus*) is a California Species of Concern. Although suitable habitat is present in many patches within the project area, the nearest known occurrences are over ten miles away; therefore, this species has a low potential for occurrence within the project area. In addition, this species was not captured during protocol San Bernardino kangaroo rat trapping surveys conducted within portions of Alignments 1 and 2 east of Crafton Avenue (Davenport 2007).

The **Santa Ana sucker** (*Catostomus santaanae*) is a federally threatened species and a California Species of Concern. This species is endemic to the Los Angeles, San Gabriel and Santa Ana River drainages of Southern California. It prefers sand/rubble/boulder bottom streams with cool, clear water and algal growth. It feeds primarily on algae and detritus, although adults have been known to feed on larval insects as well. It is usually less than seven inches in length and is dark gray on top and whitish below. The sides have a faint pattern of dark blotches and indistinct stripes. Santa Ana sucker populations are in decline due to deteriorating environmental conditions associated with urbanization, water diversions, dams, pollution, recreational use, and gravel extraction leading to loss of habitat. Competition and predation by non-native species is also suspected in the decline in abundance and distribution of the Santa Ana sucker.

Although suitable habitat is present along Alternative Alignments 1 and 2 at the Santa Ana River, this species has been extirpated from the upper Santa Ana River drainage where it was once present in Fish and Santiago canyons and in Cajon and City Creeks. The species is now restricted to three noncontiguous populations: lower Big Tujunga Creek (Los Angeles River drainage); the East, West, and North Forks of the San Gabriel River (San Gabriel River drainage); and the lower and middle Santa Ana River (Santa Ana River drainage from La Cadena Drive crossing in the city of Colton, downstream at least to Imperial Highway in Orange County) (San Marino Environmental, 2008). Today, no Santa Ana suckers are known to occur in the Mentone area of the Santa Ana River or anywhere upstream of La Cadena. A drop structure in La Cadena serves as a migration barrier for upstream movement from La Cadena. While, the site has a known historical occurrence in the project area, the existing barrier well downstream precludes its occurrence in the project area and is presumed absent in all project alignments. Appendix C includes a technical study prepared to evaluate the potential presence of the Santa Ana sucker in the project area (San Marino Environmental, 2008).

The **white-tailed kite** (*Elanus leucurus*) (nesting) is a California Fully Protected Species. In the U.S., its range extends along the Pacific coast from southwest Washington through California and also includes south-central Arizona, south Texas, and south Florida. It also occurs in Mexico and Central America. In California, it is a resident and localized migrant of the Central Valley and Pacific Coast. There has been evidence in recent years to suggest that the range of this species is increasing, although erratic shifts in the distribution of this species are not uncommon. It inhabits low to moderate-elevation grasslands, savannahs, agricultural areas, wetlands, oak woodlands, and riparian woodlands and usually breeds in open areas with scattered trees, often near water. The white-tailed kite is a medium-sized hawk with a white head, grey back, long white tail, and large black scapulars. It forages often by “kiting”, or hovering in one area while scanning the ground for potential prey. Its diet includes primarily small mammals, but it will also take large insects, amphibians, and lizards. Degradation or loss of grassland habitat to development or ranching is a significant threat to populations (Dunk, 1995). Historic population declines may be attributed to chemical poisoning.

PCCA documented a nesting pair of white-tailed kites in 2006 near the north portion of Alternative Alignment 1. Chambers surveys also identified one adult and one juvenile in the central and western portions (Table 3.3-1). Substantial suitable breeding habitat remains in many

areas of the pipeline alternative alignments for this species. Therefore, this species has a high potential to occur along the other Alternatives, and has a high potential to breed in future years on the project site. Since this species is fully protected in California, any nesting white-tailed kite territory must be avoided during construction.

The **coastal California gnatcatcher** (*Poliophtila californica californica*) is a federally threatened species and a California Species of Concern. The historic range of this species extended from the coast and foothills of Ventura County, south through Los Angeles, southwestern San Bernardino, western Riverside, Orange, and San Diego Counties of California into northwestern Baja California, Mexico. Populations have since become increasingly fragmented. It is a permanent resident of Diegan, Riversidian, and Venturan sage scrub sub-associations found from sea level to 2,500 feet in elevation. Within its range, it associates strongly with California sagebrush (*Artemisia californica*) dominant habitats and also occurs in mixed scrub habitats with lesser percentages of this favored shrub. Other plant species important for the nesting and foraging of this species include California buckwheat (*Eriogonum fasciculatum*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), and chaparral broom (*Baccharis sarothroides*). Chamise (*Adenostoma fasciculatum*) habitats may also support breeding pairs, especially where coastal sage scrub may occur nearby or form a component. The coastal California gnatcatcher is a small, secretive songbird with grayish coloration and faint white outer tail margins. Males of this species exhibit a black cap during the breeding season. This insectivorous bird nests and forages in moderately dense stands along gentle slopes, arid hillsides, mesas, foothills, and alluvial washes. It gleans a variety of insects within its territory, including caterpillars and other larval insects. It builds a cup nest in suitably dense shrubs and lays four eggs, on average. Both parents participate in all stages of nest-building and rearing of the young. Most studies with large numbers of individually-marked gnatcatchers have found home range sizes in excess of ten acres (Mock et al. 1990). Non-breeding season home ranges may be about 80 percent larger than breeding season home ranges (Preston et al. 1998, Bontrager 1991). Contributing factors in the decline of this species include overly frequent fire cycles, non-native plant invasions, brown-headed cowbird (*Molothrus ater*) nest parasitism, predation, and widespread habitat loss to urbanization and agriculture. Rangewide habitat loss is estimated at 75 to 90 percent (Westman 1981, MBA 1991), and the populations that remain are under increasing pressure from development. In 1990, the population of California gnatcatchers was estimated at less than 2,000 pairs (Atwood 1990). Current estimates range between 3,000 and 5,000 breeding pairs, which are largely dependent upon rainfall cycles.

The entire project site lies within Critical Habitat designated by USFWS. Suitable habitat for this species is present along most portions of all four alternative alignments. This species was found to be present in areas along Alternative Alignments 1 and 2 during surveys conducted by P & D (2005) and PCCA (2006) during two breeding seasons. Chambers found additional locations during separate surveys along Alternative Alignments 1 and 4 in the 2007 non-breeding season (Chambers Group 2007, 2007c) (Table 3.3-1). No habitat exists within the proposed Citrus Pump Station and Citrus Reservoir project areas. Therefore, this species is present along portions of Alternative Alignments 1, 2, and 4, has a high potential for occurrence along Alternative

Alignment 3, and is assumed absent from the Citrus Pump Station and Citrus Reservoir project areas.

The **San Bernardino kangaroo rat** (*Dipodomys merriami parvus*) is a federally endangered species and a California Species of Concern. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about 7 distinct populations. It prefers gravelly and sandy soils in alluvial habitats, where it constructs underground burrows, and rarely occurs in dense vegetation. This species is a small, nocturnal rodent with pale yellow and dusky brown fur, and dark brown tail stripes, footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in its burrows for later consumption. It also consumes some green vegetation and insects when available. The primary threats to the continued existence of this species include habitat loss, degradation, and fragmentation due to developments related to housing, mining, and flood control.

The entire project site lies within Critical Habitat designated by USFWS. Numerous burrows and scats were found within the project area during an initial site visit conducted by Stephen Montgomery, a USFWS permitted biologist who has previous experience trapping San Bernardino kangaroo rat in the vicinity of the project area. This species was also found present along Alternative Alignment 1 east of Crafton Avenue (Davenport 2007) and has a high potential to occur along the more open portions of all four alternative alignments (Table 3.3-1). Due to lack of suitable habitat and exclusionary fencing, this species is assumed to be absent within the proposed Citrus Pump Station and Citrus Reservoir project area.

The **Santa Ana speckled dace** (*Rhinichthys osculus* ssp.3) is a California Species of Concern. Although once widely distributed in the Santa Ana, San Gabriel, and Los Angeles River systems, the speckled dace currently has a very limited distribution in the headwaters of the San Gabriel, Santa Ana River, and Los Angeles river systems. Found only in permanent flowing streams with summer water temperatures of 17-20° C, it usually inhabits shallow cobble and gravel riffles within its river systems. This small, slender fish species is cryptically colored to mimic its stream substrates. It primarily eats algae, but will also take small insects and larval insects as well. Threats to this species include predation by non-native fishes and bullfrogs, water diversion projects, and flood control operations.

In the Santa Ana River basin, in the San Bernardino National Forest, small Santa Ana speckled dace populations did occur in the North Fork of Lytle Creek, Cajon Wash, Lone Pine Canyon, Strawberry Creek, Plunge Creek, Twin Creek, City Creek, Mill Creek and the South Fork of the San Jacinto River. Of these, at least the Strawberry Creek, Twin Creek and City Creek populations have recently been extirpated. The Mill Creek population has been present over at least the last 20 years of records, but the mainstem population is more variable. Dace have been specifically found in the Santa Ana River at Mentone (San Marino Environmental, 2008). Since this species is historically and currently known to occur in the Santa Ana River and flow

conditions and substrate types are conducive for this species, it has a high potential to occur along Alternative Alignments 1 and 2 at the Santa Ana River crossing.

The **Belding's orange-throated whiptail** (*Aspidoscelis hyperythrus beldingi*) is a California Species of Concern. This species is found from San Bernardino County, California throughout Baja California, Mexico. It frequents sandy washes, alluvial floodplains, rocky hillsides, and vegetation communities that provide both open territory and adequate shading. This species is often associated with California buckwheat, California sagebrush, black sage, white sage, chamise, and redshank (*A. sparsifolium*) sage scrub and chaparral habitats. Due to similar habitat requirements, it typically occurs in association with the San Diego horned lizard (*Phrynosoma coronatum blainvillii*). Hibernation sites occur on well-insolated, south-facing open slopes that are often adjacent to terraces with woody perennials. The Belding's orange-throated whiptail is a moderately-sized, gray, reddish brown, dark brown, or black lizard with five to seven pale yellow or tan stripes along each side. The top of the head has a yellow-brown to olive gray, single, fused frontoparietal scale. Undersurfaces are yellowish white, often with gray or bluish slate on the belly. Adults have varying degrees of red- orange wash that may occur on all undersurfaces. The latter is especially prominent on the throat and chest in breeding males. In hatchlings and juveniles, the tail is a highly visible bright blue. Prey items include a variety of insects and spiders. The primary threat to the continued existence of this species is habitat loss.

The project site supports suitable habitat, and occurrences have been reported within two miles of the site. Therefore, this species has a moderate potential to occur.

The **coast horned lizard** (*Phrynosoma coronatum blainvillii*) is a California Species of Concern. It occurs from the Transverse Ranges in Kern, Los Angeles, Santa Barbara, and Ventura counties southward throughout the Peninsular Ranges of southern California to Baja California, Mexico as far south as San Vicente. It is found in a wide variety of habitats including coastal sage scrub, annual grasslands, chaparral, oak woodlands, riparian woodlands, and coniferous forests. It is perhaps most abundant in riparian and coastal sage scrub habitats on old alluvial fans of the southern California coastal plain. In foothill and mountain habitats that are covered with dense brush or other vegetation, the species is largely restricted to areas with pockets of open microhabitat; this habitat structure can be created by natural events such as fire and floods or human-created disturbances such as livestock grazing, fire breaks, and road construction. The key elements of these microhabitats are loose, fine, sandy soils, an abundance of native ants, open areas for basking, and low, but relatively dense shrubs for refuge. The coast horned lizard is a moderately-sized, dorso-ventrally flattened lizard with five backwardly projecting head spines, a large shelf above each eye, large, convex, smooth scales on the forehead, and two parallel rows of pointed scales fringing each side of the body. Its diet is almost entirely composed of ants, especially harvester ants, but it will take other insects on an opportunistic basis. The primary threat to the continued existence of this species is habitat loss. Other threats include non-native ants (especially Argentine ants) and disturbances related to off-road vehicles.

Since suitable habitat occurs throughout the project site, and known occurrences exist within five miles, this species has a moderate potential to occur along the project site.

The **two-striped garter snake** (*Thamnophis hammondi*) is a California Species of Concern. It is found in disjunctive populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. Found in or near permanent and intermittent sources of freshwater, habitats include streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may surround its watery realm. It is recognized by its lack of a mid-dorsal stripe, and coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. The historic range of this species has been lost to housing, urban development, and other human impacts by an estimated 40 percent (Stebbins 2003).

During the Chambers Group 2007 reconnaissance surveys, the two-striped garter snake was identified in the Santa Ana River crossing along Alternative Alignemnts 1 and 2 (Chambers 2007). This species is assumed absent from east-west segments of the proposed pipeline alignments and the proposed pump station and reservoir, as sufficient aquatic habitat does not exist onsite.

The **Cooper's hawk** (*Accipiter cooperii*) (nesting) is a California Species of Concern. This species occurs as a migrant and/or resident over most of the U.S. from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known to breed in suburban and urban areas with similar tree structure to native habitats. This medium-sized (14-20 inches) hawk is well-adapted for hunting birds as prey with its long tail and short, rounded wings; these features allow maneuverability in pursuit and on the ambush. Historic population losses resulted from the widespread use of DDT. Recent threats include habitat loss and illegal hunting (Remsen 1978).

The Cooper's hawk has been documented on several occasions along pipeline Alternative Alignment 1 (PCCA 2006, Chambers 2007). This species has been observed in sage scrub associations as well as the adjacent citrus orchards near the north end of Opal Avenue. It has also been observed within the east-west portions of the pipeline alignments. This species could potentially breed on the project site and/or include a portion of the site as breeding territory. It has a high potential to occur along the remainder of the project site.

The **southern California rufous-crowned sparrow** (*Aimophila ruficeps canescens*) is a California Species of Concern. It is one of 17 recognized subspecies of the rufous-crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico. However, this sub-species is a resident of southwest California on the slopes of the Transverse and Coastal ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martin Island. Habitats include broken sage scrub and chaparral, native grasslands with sparse shrubs, and rocky hillsides and canyons with open patches and low to moderate brush cover. It is a small non-descript sparrow with a rusty

crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

The southern California rufous-crowned sparrow has been observed along Alternative Alignments 1, 2, and 3 and is a permanent resident of the area. Previous surveys as well as the surveys conducted by Chambers Group in 2007 have detected the species onsite (PCCA 2006, Chambers 2007) (Table 3.3-1). It has a high potential to occur along Alternative Alignment 4 and is assumed absent from the proposed reservoir and pump station sites due to lack of habitat.

The **great blue heron** (*Ardea herodias*) rookery site (nesting colony) is considered a special-status species resource tracked by the CDFG. The rookery sites are typically located in groves of large trees within proximity to aquatic foraging areas of streams and wetlands, and grassland habitat where it will feed on rodents. The great blue heron was observed onsite by PCCA and Chambers Group biologists (PCCA 2006) (Table 3.3-1). Chambers Group documented the location of a foraging individual within Mill Creek near the Crafton Hills Pump Station along Alternative Alignment 1. This individual was later seen flying downstream. No heron rookeries were observed anywhere on the project site, breeding potential is assumed absent, and the potential for this species to occur as a foraging individual over the remainder of the alternative alignments is high.

The **Lawrence's goldfinch** (*Carduelis lawrencei*) (nesting) is not a listed species, but it is considered rare in California. It appears on the USFWS list of Birds of Conservation Concern and watch lists of several conservation groups. It breeds in the foothills surrounding the Central Valley of California and in the coastal Californian foothills from Contra Costa County south to Santa Barbara County. In southern California, it is rarely found at higher elevations of the Colorado Desert and was also found historically in the lower Colorado River Valley. It inhabits arid and open woodlands near chaparral or other bushy areas, tall annual grasslands, and tends to associate with sources of water. Its nesting grounds are frequently dominated by live oaks (*Quercus* spp.) and blue oaks (*Quercus douglasii*) and may also use riparian woodlands, coastal scrub, or broadleaf evergreen forests (Davis, 1999). The Lawrence's goldfinch is a small, grey-backed finch with a conical bill and yellow washes on the breast and wings. The male has a black "mask" covering the lores and chin. The female has similar features but does not have a mask and has duller yellow markings. Unlike many wildlife species, the Lawrence's goldfinch may benefit from non-intensive human activities that increase annual plant populations, consequently providing food for the species. However, the small relative abundance of the species may make it more susceptible to habitat loss.

Several Lawrence's goldfinch individuals were identified during the Chambers Group bio-reconnaissance survey along Alternative Alignments 1 and 3 and east of Crafton Avenue (Chambers Group 2007c) (Table 3.3-1). All observations were of pairs or of small mixed flocks containing up to eight individuals. While all observations have occurred during the non-breeding season, suitable breeding habitat exists onsite, and its breeding status on the site is uncertain at this time. It has a moderate potential to occur along the remainder of the project site.

The **Vaux's swift** (*Chaetura vauxi*) (nesting) is a California Species of Concern. The breeding range of this species extends along the Pacific coast from southeast Alaska to central California, and as far inland as western Montana. It winters from eastern and western Mexico south to Panama and, disjunctly, on the Yucatan Peninsula and in northern Venezuela (Bull and Beckwith 1993). Migrants occur throughout California, primarily from mid-April to late May in spring, and from late August to mid-October in fall. It occurs in the open sky over foothills, burnt forests, woodlands, lakes, and rivers. This species nests primarily in hollow live trees and forages aerially for insects on the wing. The Vaux's swift is dark gray overall with no contrasting markings and a short, stubby tail. The chief cause of population declines is thought to be the felling of old growth forests and replacement with young, even-aged stands; this deprives swifts of available nest and roost sites (Bull and Beckwith 1993). A potential threat to migrants is the loss of important, traditional roost sites.

One Vaux's swift was seen in migration along Alternative Alignment 1 east of Crafton Avenue (Chambers Group 2007c). The potential for this species to occur as a migrant or as a foraging species over the remainder of the project site is high. It is assumed absent from the project site as a breeding species.

The **northern harrier** (*Circus cyaneus*) is a California Species of Concern. This species includes almost all of North America within its range and extends into South America. True to its nickname, the "marsh hawk", habitats include wetlands, marshy meadows, boglands, pasturelands, wet grasslands, old fields, tundra, open riparian woodlands, and freshwater and brackish marshes. It also occurs on dry uplands, including upland prairies, mesic grasslands, drained marshlands, croplands, and cold desert shrub-steppe, especially where these occur next to water bodies. It nests on the ground in shrubby vegetation, often at the edge of a marsh. Adult males are gray with black wingtips, and females and juveniles are brown; all have a conspicuous white rump. This long-winged, long-tailed hawk hunts by flying low and slow in a characteristic dihedral, looking for and listening for rodents as well as small birds. Population declines are attributed to widespread habitat loss and chemical poisoning.

The northern harrier was identified along the south portion of Alternative Alignment 2, east of Crafton Avenue, during previous surveys (PCCA 2006). Although much of the project site contains suitable habitat for this species, its breeding status on the project site is uncertain at this time. It has a high potential to occur within the remainder of the project site.

The **yellow warbler** (*Dendroica brewsteri petechia*) (nesting) is a California Species of Concern. Its breeding range includes most of North America from northern Alaska and northern Canada to the southern U.S. and Mexico. Wintering birds occur from Mexico to Peru. Breeding habitats include wet areas such as riparian woodlands, orchards, gardens, swamp edges, and willow thickets. Most breeding habitats generally contain medium to high-density tree and shrub species with ample early successional understories. In migration, it may occur in other habitats, including early seral riparian habitats. It is almost entirely insectivorous but also eats some berries. Populations are in decline in California due to habitat loss, grazing of riparian understories, and nest parasitism by the brown-headed cowbird (*Molothrus ater*).

The yellow warbler was identified along Alternative Alignment 3 during the Chambers Group reconnaissance survey on April 10, 2007. Although very limited suitable breeding habitat is available along the pipeline alternative alignments, the individual observed was most likely in migration, as it was observed in early April, before the breeding season (mid-May to mid-June), in a patch of mulefat which would not have provided suitable nesting habitat. No yellow warblers were observed during any other surveys including the 2006 PCCA focused surveys for other special-status riparian bird species such as the willow flycatcher and least Bell's vireo.

The **snowy egret** (*Egretta thula*) rookery site (nesting colony) is considered a special-status species resource tracked by the CDFG. The rookery sites are typically located in groves of large trees within proximity to aquatic foraging areas of streams and wetlands. The snowy egret was observed in Mill Creek along Alternative Alignment 1 during a Chambers Group bio-reconnaissance survey (Table 3.3-1). This individual was later seen flying downstream. No egret rookeries were observed anywhere on the project site, breeding potential is assumed absent, and the potential for this species to occur as a foraging individual over the remainder of the alternative alignments is high.

The **California horned lark** (*Eremophila alpestris actia*) is a California Species of Concern. It is a subspecies of the horned lark, a widespread species of the northern hemisphere, which breeds in California generally from Sonoma County southward. It occurs in a variety of open habitats, including bare ground, sparse short grasslands, dry prairies, open fields, deserts, brushy flats, tundra, and developed habitats, such as fallow agricultural fields, airports, golf courses, parks, and open residential areas. It is present in the winter mostly in flocks. Breeding territories are more widespread, and flocks do not typically occur during the breeding season. In southern California and particularly in the desert region, winter populations are greatly augmented by other subspecies. It walks along the ground rather than hops, and forages for seeds and insects. The diet during the breeding season consists primarily of insects, snails, and spiders. Since the California horned lark prefers open habitats, which are easier targets for development, habitat loss is one of the primary factors in the decline of this subspecies. Other factors include pesticide poisoning on agricultural fields, and tilling, harvesting, and mowing operations.

Since substantial, open, barren habitats are not generally found on the project site, this species has a low potential to occur as a breeding species within the project site. It has a higher potential to occur as a winter resident.

The **loggerhead shrike** (*Lanius ludovicianus*) (nesting) is a California Species of Concern. Its range includes most of the U.S. from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua tree woodlands, and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other structures that serve as lookout posts for potential prey. It is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. It is recognized by its black facial mask, overall gray, black, and white color pattern, relatively big head, and hook-

tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988, Scott 1990).

The loggerhead shrike was observed along Alternative Alignments 1 and 2 of the project site (Table 3.3-1). It has been detected during several surveys and is a permanent resident of the area (PCCA 2006, Chambers 2007). Its nesting status is unknown at this time and additional individuals may overwinter along the project site.

The **American white pelican** (nesting colony) (*Pelecanus erythrorhynchos*) is a California Species of Concern. The range of this species includes most of western North America, the Gulf of Mexico coastline, and Florida south into South America; however, populations tend to be localized within this range. It is a large, white bird with a long, pouched bill and a nine-foot wingspan that shows a large, contrasting black pattern beneath. Habitats include ocean coastlines, estuaries, large lakes, salt ponds, and smaller inland bodies of water. It forages on these habitats in areas where groups can often be seen hunting together to drive fish into the shallows. Threats to the existence of this species include disturbances at nesting colonies from habitat degradation, development, and water-control projects. Additional threats include chemical poisoning and water pollution.

A group of four American white pelicans were observed in migration high above the project site by Chambers Group biologists (Chambers 2007). This species likely uses the corridor as a migratory route each season. At the time of the Chambers Group 2007 reconnaissance surveys, the water bodies of the area were not sufficient to encourage stopping over by this species. In addition, it is highly unlikely that a nesting colony would be established on the project site.

The **Brewer's sparrow** (*Spizella breweri*) (nesting) is not a listed species, but it is considered rare in California. It appears on the USFWS list of Birds of Conservation Concern and on the watch lists of several conservation groups. It largely breeds in the Great Basin region of the United States into northeastern California, with small populations in the upper plateaus of Southern California. This species winters in sagebrush shrublands and brushy desert habitats of southeast California and central Arizona, including desert scrub dominated by various saltbush species and creosote. It breeds in shrublands, especially in scrub dominated by big sagebrush. It may also occur in large openings in piñon-juniper woodlands or large parklands within coniferous forests. The Brewer's sparrow is a nondescript brown sparrow with a finely streaked crown and white eye-ring. It is threatened by habitat degradation due to agriculture and grazing.

The **pallid bat** (*Antrozous pallidus*) is listed as a California Species of Concern. Its range extends from southern British Columbia along the Pacific coast south to central Mexico and east to central Kansas and Oklahoma. It occurs in a variety of habitats, including arid desert scrub, oak woodlands, juniper woodlands, grasslands, coniferous forests, and water-associated habitats. It may be more common throughout its range where rocky outcrops provide roost sites. The pallid bat, a member of the *Vespertilionidae* family (free-tailed bat family) is a rather large, pale, yellowish-brown bat with paler coloration below and a wingspan of about nine inches. This species is known to form day roosts of 12-100 individuals. Roosts may be natural or artificial, and often times, alternate night roosts are used as social centers. Unlike most other bat species, the

pallid bat takes few insects on the wing. It forages by looking for prey on the ground and actually listening for the footsteps of ground-dwelling insects, scorpions, crickets, grasshoppers, spiders, centipedes and other prey. Population dynamics are not fully understood, but one contributing factor in the decline of this species includes roost disturbance; it is highly susceptible to disturbance and may vacate a roost for years afterwards. Other factors include the razing of abandoned buildings, mining operations, pesticide-induced poisoning, and loss of foraging habitats.

Since suitable foraging and roosting habitats occur within the project site and the range of the species includes the area, this species has a moderate potential to occur as a foraging and roosting species over the project site. Potential roost sites are limited, but the old Lockheed structures along the central portion of the entire project site provide the best roost opportunities for this species. In addition, bat signs were observed inside many of these structures during the 2007 Chambers Group surveys.

The **northwestern San Diego pocket mouse** (*Chaetodipus fallax fallax*) is a California Species of Concern. Its range includes western Riverside, southwestern San Bernardino, eastern Orange and San Diego Counties in California, as well as northwestern Baja California, Mexico. This species prefers sage scrub, chaparral, and non-native grasslands in association with rocks or coarse gravel (McClenaghan 1983, Bleich 1973). Primarily a granivore, this pocket mouse will occasionally eat herbaceous forbs, green grasses, and insects during certain seasons. The northwestern San Diego pocket mouse has relatively small ears, with yellowish or orange hair on its sides contrasting with a dark brown back (Lackey 1996). Habitat fragmentation and degradation are the most notable threats to populations (Bolger 1997).

This species was confirmed present along Alternative Alignments 1 and 2 east of Crafton Avenue (Davenport 2007) (Table 3.3-1). Suitable habitat is found in many areas over the rest of the project site. Therefore, this species has a high potential for occurrence along the remainder of the project site.

The **western mastiff bat** (*Eumops perotis californicus*) is listed as a California Species of Concern. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in natural substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are largely unknown, but some factors include the destruction of roost sites and the loss of foraging habitats.

Since suitable foraging and roosting habitats occur within the project site and the range of the species includes the area, this species has a moderate potential to occur as a foraging and roosting species over the project site. Potential roost sites are limited, but the old Lockheed structures along the central portion of the entire project site provide the best roost opportunities for this

species. In addition, bat signs were observed inside many of these structures during the Chambers surveys.

3.3.3.4 Biological Resources in Project Components

The following sections summarize vegetation and wildlife habitats, special-status species, and jurisdictional wetlands and other waters identified within the study areas for the following project components: pipeline Alternative Alignments 1, 2, 3, and 4, the Citrus Reservoir, and Citrus Pump Station. The following discussions refer to both north-south segments and east-west segments of Alternative Alignments 1 and 2, but only east-west segments when referring to Alternative Alignments 3 and 4 (see Figure 3.3-2).

The pipeline study area as shown in Figure 3.3-2 consists of a 400-foot wide corridor. The actual construction zone would be approximately 250 feet wide, with additional spaces for staging areas and lay-down areas. Tables 3.3-2 and 3.3-3 summarize special-status species occurrences in each project component study area.

Alternative Alignment 1

Vegetation Communities

The majority of Alternative Alignment 1 consisted of Intermediate RAFSS and Mature RAFSS (Figure 3.3-2). Occasional stretches of Pioneer RAFSS were observed just west of the Crafton Hills Pump Station, along Cone Camp Road near the Foothill Pump Station, and along the northern east-west portion of Alignment 1. Disturbed RAFSS communities were also present in some areas. Portions of the RAFSS vegetation within the project area were dominated by California buckwheat and are referred to as a California Buckwheat Alluvial Fan Association. Other areas were dominated by late successional RAFSS species representative of Mature RAFSS. A small percolation basin west of the citrus groves contained running water and supported riparian vegetation. This and several other areas of riparian scrub were fed by discharge water to allow year-round riparian microhabitats.

Plant species observed in the **Pioneer and Disturbed RAFSS** vegetation along Alternative Alignment 1 included scalebroom, California croton (*Croton californicus*), brittlebush (*Encelia farinosa*), sapphire eriastrum (*Eriastrum sapphirinum*), California buckwheat, coast goldfields (*Lasthenia californica*), and deerweed (*Lotus scoparius*). **Disturbed RAFSS** occurs in the area near Alignments 1 and 2 east of Crafton Avenue and at other locations along the Alternative Alignment 1 corridor. Many of these show disturbance from dirt roadways, cut channels, and non-maintained developed areas.

Intermediate RAFSS occurs between the active flood channels and terraces of the Santa Ana River and Mill Creek, and it is the most common habitat type along Alternative Alignment 1. The dominant species found within Intermediate RAFSS along Alternative Alignment 1 include California sagebrush, California croton, brittlebush, interior goldenbush (*Ericameria linearifolia*), hairy yerba santa (*Eriodictyon trichocalyx*), California buckwheat, California matchweed (*Gutierrezia californica*), broom matchweed (*Gutierrezia sarothrae*), telegraph weed

(*Heterotheca grandiflora*), coastal goldenbush (*Isocoma menziesii*), scalebroom, coastal prickly pear (*Opuntia littoralis*), valley cholla (*Opuntia parryi*), shrubby butterweed (*Senecio flaccidus*), and Our Lord's candle (*Yucca whipplei*).

Mature RAFSS is dominant within the elevated terraces adjacent to the flood channels of the Santa Ana River and Mill Creek areas. Common species within the Mature RAFSS along Alternative Alignment 1 include chamise, California bricklebrush (*Brickellia californica*), hoary leaf ceanothus (*Ceanothus crassifolius*), chaparral whitethorn (*Ceanothus leucodermis*), California juniper (*Juniperus californica*), California buckwheat, deerweed, holly-leaf cherry (*Prunus ilicifolia*), scrub oak (*Quercus berberidifolia*), spiny redberry (*Rhamnus crocea*), and white sage.

Several areas of **California Buckwheat Alluvial Fan Association** occur along Alternative Alignment 1. In addition to California buckwheat, occasional species representative of Intermediate and Mature RAFSS were also observed throughout Alternative Alignment 1.

Riparian Scrub within Alternative Alignment 1 is present within the percolation basins and is composed of black willow (*Salix gooddingii*), mule fat, and white mulberry (*Morus alba*). Occasional western sycamore, Mexican elderberry (*Sambucus mexicana*), and tamarisk (*Tamarix ramosissima*) were also observed. Riparian herb species present along Alternative Alignment 1 include wild celery (*Apium angustifolium*), mugwort (*Artemisia douglasiana*), California cottonweed (*Epilobium ciliatum*), scarlet monkey-flower (*Mimulus cardinalis*), seep-spring monkey-flower (*Mimulus guttatus*), water pepper (*Polygonum hydropiperoides*), annual beard grass (*Polypogon monspeliensis*), blackberry (*Rubus* sp.), broad-leaved cattail (*Typha latifolia*), and giant creek nettle (*Urtica dioica*). In addition, non-native species such as giant reed (*Arundo donax*), castor bean (*Ricinus communis*), and pepper trees (*Schinus* spp.) have encroached into the areas along the upper banks.

Common Wildlife

To date, 105 species of wildlife have been documented within the project area, including 6 invertebrates, 1 amphibian, 4 reptiles, 76 birds, and 18 mammals. Chambers biologists recorded 88 wildlife species along the proposed corridors. Results included 4 invertebrate species, 1 species of amphibian, 4 species of reptile, 65 species of bird, and 14 species of mammal. Many of these species were detected along Alternative Alignment 1 during surveys in 2007 (Chambers 2007).

In addition, 52 bird species were detected within Alternative Alignment 1. These included the California quail (*Callipepla californica*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), American crow (*Corvus brachyrhynchos*), Cassin's kingbird (*Tyrannus vociferans*), western scrub jay (*Aphelocoma californica*), blue-gray gnatcatcher (*Poliophtila caerulea*), yellow-rumped warbler (*Dendroica coronata*), common ground-dove (*Columbina passerina*), great horned owl (*Bubo virginianus*), lesser nighthawk (*Chordeiles acutipennis*), barn swallow (*Hirundo rustica*), lark sparrow (*Chondestes grammacus*), northern rough-winged swallow (*Stelgidopteryx serripennis*), lesser goldfinch (*Carduelis psaltria*), mourning dove

(*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), phainopepla (*Phainopepla nitens*), California towhee (*Pipilo crissalis*), Bullock's oriole (*Icterus bullockii*), and house finch (*Carpodacus mexicanus*) (Chambers 2007).

At least fourteen mammal species were detected within Alternative Alignment 1, including coyote (*Canis latrans*), California ground squirrel (*Spermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*), domestic dog (*Canis familiaris*), desert woodrat (*Neotoma lepida intermedia*), raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), mountain lion (*Felis concolor*), pocket mouse (*Chaetodipus* sp.), long-tailed weasel (*Mustela frenata*), Virginia opossum (*Didelphis virginiana*) and striped skunk (*Mephitis mephitis*). Bat signs were observed in the abandoned buildings of the former Lockheed site, and small rodent burrows were observed throughout the site (Chambers 2007).

Special-Status Species

Four special-status plant species have been detected along Alternative Alignment 1 during recent surveys (P & D 2005, Aspen 2006, Chambers 2007) (Figure 3.3-2). These include the federally and state-endangered slender-horned spineflower and Santa Ana River woollystar and the CNPS list Parry's spineflower and Plummer's mariposa lily.

Two federally listed animals were found present along Alternative Alignment 1, the coastal California gnatcatcher and the San Bernardino kangaroo rat (Table 3.3-1). The federally threatened coastal California gnatcatcher was documented along Alternative Alignment 1 during surveys (P & D 2005, PCCA 2006, Chambers 2007b). In addition, the federally endangered San Bernardino kangaroo rat was documented along Alternative Alignment 1 (Davenport 2007). One California Fully-Protected Species, the white-tailed kite, was found nesting near the north portion of Alternative Alignment 1 west of Cone Camp Road (PCCA 2006).

Nine CSC wildlife species, including two-striped garter snake, American white pelican, Cooper's hawk, northern harrier, loggerhead shrike, Vaux's swift (*Chaetura vauxi*), yellow warbler, San Diego pocket mouse, and southern California rufous-crowned sparrow, were detected within the Alternative Alignment 1 project area (P & D 2005, PCCA 2006, Chambers 2007).

Other wildlife species detected along Alternative Alignment 1 included great blue heron (*Ardea herodias*), snowy egret (*Egretta thula*), Brewer's sparrow (*Spizella breweri*), and Lawrence's goldfinch (*Carduelis lawrencei*). These species are considered sensitive by conservation groups and other organizations, but do not have the minimum status required for consideration of specific impacts under CEQA. Rookery (nesting) sites for herons and egrets are considered sensitive and are protected by CDFG, but none are located within the project area.

Alternative Alignment 2

Vegetation Communities

The vegetation along the north-south portion of Alternative Alignment 2 just south of Greenspot Road was dominated by **Pioneer and Intermittent RAFSS** (Figure 3.3-2), and included species

such as wild celery, California croton, larkspur (*Delphinium* sp.), blue dicks (*Dichelostemma capitatum*), hairy yerba santa, goose grass (*Galium aparine*), scalebroom, wild cucumber (*Marah macrocarpus*), wishbone bush, black sage (*Salvia mellifera*), hairy horsebrush (*Tetradymia comosa*), and Our Lord's candle.

The east-west portion of Alternative Alignment 2 along Madeira Avenue southeast of the citrus orchard area was dominated by **Mature RAFSS** and included species such as chamise, California sagebrush, hairy yerba santa, wishbone bush, California blue-bell (*Phacelia campanularia*), caterpillar phacelia (*Phacelia cicutaria*), white fiesta flower (*Pholistoma membranaceum*), Mexican elderberry, and Our Lord's candle. The Mature RAFSS present in the northern segment of Alternative Alignment 2 has a similar composition to that of Alternative Alignment 1.

The east of Crafton Avenue the route contains **Developed/Ornamental** vegetation. Significantly developed areas occur where Alternative Alignment 2 follows existing roadways. Ornamental landscaping is maintained in much of the developed areas east of Crafton Avenue. Ornamental species in this area include olive (*Olea europea*), Peruvian pepper tree (*Schinus molle*), Brazilian pepper tree (*Schinus terebinthifolius*), oleander (*Nerium oleander*), English ivy (*Hedera helix*), sacred bamboo (*Nandina domestica*), jacaranda (*Jacaranda mimosifolia*), crimson bottlebrush (*Callistemon citrinus*), apple trees (*Malus* sp.), ornamental roses (*Rosa* sp.), carrotwood (*Cupaniopsis anacardioides*), common lantana (*Lantana camara*), Mexican fan palm (*Washingtonia robusta*) and several species of non-native grasses.

A small patch of **Riparian Scrub** was observed in one location near Alignments 1 and 2 east of Crafton Avenue where runoff from a paved area had accumulated on a regular basis, and included a few small black willows and mulefat, intermixed with corn (*Zea mays*), scarlet pimpernel (*Anagallis arvensis*), and Bermuda grass (*Cynodon dactylon*).

Common Wildlife

Common wildlife species detected along Alternative Alignment 2 during the 2007 surveys included amphibians, reptiles, birds, and mammals. One amphibian and three reptile species were detected during the Chambers surveys, including the Pacific chorus frog (*Pseudacris regilla*), common side-blotched lizard (*Uta stansburiana*), western fence lizard (*Sceloporus occidentalis*), and coastal western whiptail (*Cnemidophorus tigris stejnegeri*) (Chambers 2007).

Thirty-one bird species were detected where Alternative Alignment 2 shifts from Alternative Alignment 1. Common bird species detected along the corridor included California quail, red-tailed hawk, killdeer (*Charadrius vociferus*), mourning dove, white-throated swift (*Aeronautes saxatalis*), Anna's hummingbird (*Calypte anna*), mallard (*Anas platyrhynchos*), western scrub-jay, American crow, common raven (*Corvus corax*), northern rough-winged swallow, bushtit (*Psaltiriparus minimus*), northern mockingbird, yellow-rumped warbler, California towhee, spotted towhee (*Pipilo maculatus*), white-crowned sparrow (*Zonotrichia leucophrys*), lesser goldfinch and house finch (Chambers 2007).

Six mammal species, including desert cottontail, California ground squirrel, desert woodrat, coyote, raccoon, and bobcat, were detected along Alternative Alignment 2. Bat signs were observed in the abandoned buildings of the former Lockheed site, and small rodent burrows were observed throughout the site (Chambers 2007).

Special-Status Species

Three special-status plant species were detected along Alternative Alignment 2 during the Chambers Group 2007 reconnaissance surveys and/or previous surveys (P & D 2005, Aspen 2006, Chambers 2007). These include the federally and state-endangered Santa Ana River woollystar and the CNPS-list Parry's spineflower and Plummer's mariposa lily.

One federally threatened and CSC bird species, the coastal California gnatcatcher, was documented along Alternative Alignment 2 during previous surveys, and other recent gnatcatcher locations were found along convergent portions of Alternative Alignment 1 (P & D 2005, PCCA 2006). In addition, scat and burrow evidence has been observed that suggests the likelihood that the federally endangered San Bernardino kangaroo rat is present along some portions of Alternative Alignment 2 (Chambers 2007). This species has been confirmed present just north of Alternative Alignment 2 east of Crafton Avenue (Davenport 2007).

One California Fully-Protected Species, the white-tailed kite, was found nesting near the north portion of Alternative Alignment 1 west of Cone Camp Road (PCCA 2006). This breeding pair likely included a portion of Alternative Alignment 2 as breeding territory.

Six CSC wildlife species, including two-striped garter snake, American white pelican, Cooper's hawk, northern harrier, loggerhead shrike, and southern California rufous-crowned sparrow, were detected within the Alternative Alignment 2 project area during the 2007 reconnaissance surveys and/or prior surveys (P & D 2005, PCCA 2006, Chambers 2007).

Alternative Alignment 3

Vegetation Communities

The vegetation along Alternative Alignment 3 was primarily Intermediate RAFSS and Pioneer RAFSS and Disturbed Pioneer RAFSS (Figure 3.3-2). Mature RAFSS is abundant along Alternative Alignment 3 and other portions of Alternative Alignment 3 were characterized as Ruderal Vegetation.

Intermediate RAFSS is dominant along convergent portions of Alternative Alignment 1 and the majority of the Alternative Alignment 3 segment. The largest continuous portion of this habitat type occurs along the portion that borders the Mill Creek levee. Small patches are also found to the east between the active flood channels and terraces of the Santa Ana River and Mill Creek, terminating at the Crafton Hills Pump Station. The dominant species found within these areas include California sagebrush, California croton, brittlebush, hairy yerba santa, California buckwheat, California matchweed, broom matchweed, telegraph weed, and coastal prickly pear.

Pioneer and Disturbed RAFSS occur predominantly along the convergent portion of Alternative Alignment 1 from the Foothill Pump Station to south of the Santa Ana River. Pioneer RAFSS and Disturbed Pioneer RAFSS communities also occur at the east end of the convergent portion of Alternative Alignment 1 near the Crafton Hills Pump Station, between the active flood channels and terraces of the Santa Ana River and Mill Creek. An additional patch of Pioneer RAFSS occurs in the Alternative Alignment 3 alignment near the percolation basins. Common species within these series found along Alternative Alignment 3 include scalebroom, California croton, brittlebush, California buckwheat, coast goldfields, and deerweed.

Mature RAFSS primarily occurs along Alternative Alignment 3 on convergent portions of Alternative Alignment 1 between Garnet Street and the Crafton Hills Pump Station. Smaller areas of this community also occur at the northeast edge of the citrus orchards, east of Garnet Street, near the percolation basins, and near the Foothill Pump Station. Species typical of this vegetation community observed on site include California sagebrush, hairy yerba santa, wishbone bush, caterpillar phacelia, and Our Lord's candle.

Riparian Scrub was observed in convergent portions of Alternative Alignment 1 and east of Garnet Street, at the Santa Ana River crossing, as well as near some of the percolation basins along the Alternative Alignment 3 segment. Species observed include black willow, mulefat, and white mulberry. In some areas western sycamore, Mexican elderberry, and tamarisk were observed.

Portions of Alternative Alignment 3 were characterized as Bare Ground or **Ruderal Vegetation**. Bare ground areas are those areas that are devoid of vegetation (cleared or graded) such as dirt roads. Ruderal vegetation areas are those areas that are dominated by a sparse to moderate vegetation cover. Ruderal vegetation is dominated by weedy non-native colonizing species, but may have a component of native colonizing species present. Portions of Alternative Alignment 3 have been revegetated in the past, but are still sparsely vegetated and dominated by ruderal species. Species observed within the ruderal areas of this alternative alignment included popcorn flower, black mustard (*Brassica nigra*), telegraph weed, tree tobacco (*Nicotiana glauca*), leather spineflower (*Lastarriaea coriacea*), and pectocarya (*Pectocarya* spp.).

Common Wildlife

Common wildlife species detected along Alternative Alignment 3 during the Chambers surveys included reptiles, birds, and mammals. Three reptile species were detected during the Chambers surveys, including the common side-blotched lizard, western fence lizard, and coastal western whiptail (Chambers 2007).

In addition to the species found along sections of Alternative Alignment 1, thirty-two bird species were detected along Alternative Alignment 3 during the Chambers surveys. Common bird species detected along the corridor included California quail, red-tailed hawk, mourning dove, black phoebe (*Sayornis nigricans*), Anna's hummingbird, ash-throated flycatcher (*Myiarchus cinerascens*), common raven, cliff swallow (*Petrochelidon pyrrhonata*), northern rough-winged

swallow, California towhee, spotted towhee, house finch, lesser goldfinch, white-crowned sparrow (Chambers 2007).

Three mammal species were detected along Alternative Alignment 3, including desert woodrat, desert cottontail, and coyote. Bat signs were observed in the abandoned buildings of the former Lockheed site, and small rodent burrows were observed throughout the site (Chambers 2007).

Special-Status Species

Three special-status plant species were observed along Alternative Alignment 3 during the Chambers 2007 reconnaissance survey and a previous focused survey (Aspen 2006, Chambers 2007). These include the federally and state-endangered Santa Ana River woollystar (found along the convergent portion of Alternative Alignment 1 north of the Santa Ana River) and the CNPS list Parry's spineflower and Plummer's mariposa lily.

Three CSC wildlife species, the loggerhead shrike, yellow warbler, and southern California rufous-crowned sparrow, were observed on the Alternative Alignment 3 segment during the Chambers Group surveys and/or prior surveys (P & D 2005, PCCA 2006, Chambers Group 2007) (Table 3.3-1).

Other species detected along Alternative Alignment 3 during the 2007 surveys included Brewer's sparrow and Lawrence's goldfinch (Chambers 2007). These species are considered sensitive by conservation groups and other organizations, but do not have the minimum status required for consideration of specific impacts under CEQA.

Alternative Alignment 4

Vegetation Communities

The majority of Alternative Alignment 4 consisted of RAFSS communities and is dominated by: Intermediate RAFSS and Mature RAFSS (Figure 3.3-2). Pioneer RAFSS and Disturbed Pioneer RAFSS is abundant along Alternative Alignment 4 and a small section of California Buckwheat Alluvial Fan Association was observed. Other portions of Alternative Alignment 4 were characterized as Ruderal Vegetation, Cultivated Agriculture, and Developed/Disturbed areas.

Intermediate RAFSS is dominant along convergent portions of Alternative Alignment 1, but the Alternative Alignment 4 segment also contains large patches between the percolation basins. The dominant species found within these areas include California sagebrush, California croton, brittlebush, hairy yerba santa, California buckwheat, California matchweed, broom matchweed, telegraph weed, and coastal prickly pear.

Mature RAFSS primarily occurs along Alternative Alignment 4 on convergent sections of Alternative Alignment 1, just east of Garnet Street to the Crafton Hills Pump Station. Small areas also occur at the northern edge of the citrus orchards and along the portion of Alternative Alignment 4 near the citrus orchards. Species typical of this vegetation community observed onsite include California sagebrush, hairy yerba santa, wishbone bush, caterpillar phacelia, and Our Lord's candle.

Pioneer and Disturbed RAFSS communities occur primarily along Alternative Alignment 4 on convergent portions of the north-south alignment of Alternative Alignment 1 and smaller areas occur near the Crafton Hills Pump Station. Common species observed in these areas include scalebroom, California croton, brittlebush, California buckwheat, coast goldfields, and deerweed.

Most of the **California Buckwheat Alluvial Fan Association** occurs along convergent sections of Alternative Alignment 1 between Garnet Street and the south end of Alternative Alignment 4 and some areas were also found at the south end of the Alternative Alignment 4 segment. In addition to California buckwheat, other species observed include brittlebush, deerweed and black sage.

Ruderal Vegetation on Alternative Alignment 4 primarily occurs on convergent sections of Alternative Alignment 1, especially at the southern end of the north-south alignment. Other ruderal areas are found within the percolation basins of Alternative Alignment 4 and portions of convergent sections of Alternative Alignment 1. Species observed within these areas include popcorn flower, black mustard, telegraph weed, tree tobacco, leather spineflower, and pectocarya.

Riparian Scrub was observed within convergent sections of Alternative Alignment 1 along the Santa Ana River crossing, along the portion of Alternative Alignment 4 near the citrus orchards, and convergent sections of Alternative Alignment 1 bordering the percolation basins near Garnet Street. Species observed include black willow, mulefat, and white mulberry. In some areas western sycamore, Mexican elderberry, and tamarisk were observed.

Cultivated Agriculture along Alternative Alignment 4 is made up of various citrus species and occurs in convergent sections of Alternative Alignment 1 on the north, south, and west edges of the citrus orchards.

Developed/Disturbed areas primarily occur in convergent sections of Alternative Alignment 1. Many of the Developed portions along Alternative Alignment 4 contain abandoned structures and maintained roads. Disturbed areas consist of dirt/gravel access roads and cleared areas devoid of vegetation.

Common Wildlife

Common wildlife species detected along Alternative Alignment 4 during the Chambers Group surveys included reptiles, birds, and mammals. In addition to the species found in convergent sections of Alternative Alignment 1, two reptile species, the side-blotched lizard and western fence lizard, were specifically detected along the Alternative Alignment 4 segment during the Chambers Group surveys.

Thirty-one bird species were detected along the Alternative Alignment 4 segment. Common species detected along the corridor included California quail, red-shouldered hawk, red-tailed hawk, killdeer, mourning dove, white-throated swift, Anna's hummingbird, black phoebe, western scrub-jay, American crow, cliff swallow, bushtit, rock wren, blue-gray gnatcatcher, California towhee, spotted towhee, white-crowned sparrow, lesser goldfinch, and house finch (Chambers 2007).

Six mammal species were detected along Alternative Alignment 4, including the desert cottontail, desert woodrat, coyote, raccoon, and striped skunk. Bat signs were observed in the abandoned buildings of the former Lockheed site, and small rodent burrows were observed throughout the site (Chambers 2007).

Special-Status Species

One special-status plant species, Parry's spineflower, was observed along Alternative Alignment 4 during the Chambers Group 2007 reconnaissance surveys (Figure 3.3-2). The federally and state-endangered slender-horned spineflower and Santa Ana River woollystar were also found along the convergent portion of Alternative Alignment 1 north of the Santa Ana River.

In addition to the species found along convergent sections of Alternative Alignment 1, two sensitive wildlife species, the California fully-protected white-tailed kite, and the federally threatened coastal California gnatcatcher, were detected along the Alternative Alignment 4 segment during the Chambers Group bio-reconnaissance surveys (Table 3.3-1).

Citrus Reservoir and Citrus Pump Station

Vegetation Communities

The citrus orchard at the west end of the east-west alignment portion of Alternative Alignment 1 is the location for the proposed Citrus Reservoir and the proposed Citrus Pump Station. This portion of the project site is an active citrus orchard, which is shown as cultivated agriculture on Figure 3.3-2. The orchard comprises nearly the entire proposed reservoir and pump station footprint.

Disturbed areas were also observed throughout the proposed reservoir site where citrus trees were absent. Species found within these areas included coast prickly pear, California buckwheat, tree tobacco, cheat grass (*Bromus tectorum*), California sagebrush, brittlebush, flax-leaved horseweed (*Conyza bonariensis*), foxtail chess (*Bromus madritensis* ssp. *rubens*), and black mustard.

Cultivated agriculture includes areas whose vegetation is dominated by native or non-native plants used for commercial agriculture. Species found on the proposed reservoir site include mature orange (*Citrus sinensis*) and grapefruit (*Citrus* sp.) trees.

Common Wildlife

Absence of native habitat limits the diversity of native wildlife species, therefore fewer amphibian, reptile, mammal, and bird species were observed within the Citrus Reservoir and Citrus Pump Station project area. The common side-blotched lizard was the only reptile detected within these sites (Chambers 2007).

Twenty-five bird species were detected within the vicinity of the project area, including common raven, American crow, black phoebe, Anna's hummingbird, barn swallow, northern mockingbird, yellow-rumped warbler, California towhee, white-crowned sparrow, and lesser goldfinch.

(Chambers 2007). The four detected mammal species included desert cottontail, desert woodrat, coyote, and raccoon (Chambers 2007).

Special-Status Species

No special-status plant or wildlife species were detected within the Citrus Reservoir and Citrus Pump Station project area during the surveys, and the habitat value for such species is severely limited as a result of the conversion to cultivated agriculture. In addition, exclusion fencing has been installed along the fence line surrounding the property to reduce the potential for the San Bernardino kangaroo rat to occupy the area.

3.3.4 Impact Assessment Methodology

To determine the level of significance of an identified impact, the criteria outlined in the *CEQA Guidelines* were used. The following is a discussion of the approaches to, and definitions of, significance of impacts to biological resources drawn from several distinct guidelines sections.

CEQA Guidelines Section 15065 directs lead agencies to find that a project may have a significant effect on the environment if it has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory. *CEQA Guidelines* Section 15206 further specify that a project shall be deemed to be of statewide, regional, or area-wide significance if it would substantially affect sensitive wildlife habitats including, but not limited to, riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species as defined by the Fish and Game Code Section 903. *CEQA Guidelines* (Section 15380) provide that a plant or animal species, even if not on one of the official lists, may be treated as “rare or endangered” if, for example, it is likely to become endangered in the foreseeable future. Additional criteria to assess significant impacts to biological resources due to the proposed project are specified in *CEQA Guidelines* Section 15382 (Significant Effect on the Environment) “...a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.”

3.3.5 Impact Assessment

The proposed project’s potential impacts were assessed using the *CEQA Guidelines* Appendix G Checklist. The following sections discuss the key issue areas identified in the *CEQA Guidelines* with respect to the project’s potential effect to biological resources. Significance thresholds are identified and a significance conclusion is made following the discussion.

3.3.5.1 Sensitive Species and Habitats

This section discusses the following CEQA Checklist questions:

Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS?

Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS?

Significance Threshold

The proposed project would have a significant impact if construction or operation of the project would have a substantial adverse effect, either directly or through habitat modifications on candidate, sensitive, or special-status species. For the purpose of this EIR analysis, a substantial adverse impact would result if the project would result in the take of a formally listed species including habitat modification, and/or take of special-status species. Additionally, significant impacts would result if there was an adverse effect on riparian habitat or other sensitive natural community such as RAFSS by means of permanent habitat removal or disturbance.

Impact Analysis

Santa Ana River Woollystar and Slender-Horned Spineflower

The proposed project would result in both temporary (up to three-years of construction plus upwards of five-years for habitat restoration to succeed) and permanent impacts on RAFSS habitat. Temporary habitat destruction would occur within the approximately 250-foot wide construction zone. Permanent habitat destruction would occur within an approximately 20-foot wide zone that would be required as a permanent maintenance road. Figure 3.3-1 identifies RAFSS habitat within a 400-foot study area along the pipeline Alternative Alignments. Actual acreages impacted by the project would be based on the actual construction zone. **Table 3.3-4** provides calculated acreages for a 250-foot wide corridor down the center of the study area. (Acreage calculations in the table assume that Alternative Alignments 3 and 4 share the north-south segment of Alternative Alignment 1 as well as the eastern portion of Alternative Alignment 1 along the Mill Creek levee to the Crafton Hills Pump Station.)

As described above and shown in Table 3.3-1, special-status plant and wildlife species occur in the RAFSS. The setting section describes the occurrence of the formally listed Santa Ana River woollystar and slender horned spineflower as occurring within the WSPA in the historic floodplain area of the Santa Ana River. The Santa Ana River woollystar and slender horned spineflower would likely be encountered only within or near the WSPA. Occurrence of these species outside the river wash within the project impact area has not been recorded in the field surveys and is not expected. The project would clear about 12.44 acres through the WSPA. Therefore, approximately 12.44 acres of habitat that supports Santa Ana River woollystar and slender-horned spineflower would be temporarily affected by the project. No other federally or state-listed plant species would be affected by the project. However, several California Species of Concern plant species could be affected in RAFSS habitat within the project construction zone outside the WSPA.

TABLE 3.3-4: AFFECTED HABITAT ACREAGE

Vegetation Type	Alternative Alignment 1	Alternative Alignment 2	Alternative Alignment 3	Alternative Alignment 4
Temporary Impacts from a 250' wide construction corridor (acres)				
Pioneer and Disturbed Pioneer RAFSS	35.21	13.8	35.6	35.14
Intermediate and Disturbed Intermediate RAFSS	35.53	58.42	46.21	39.86
Mature RAFSS	31.78	43.57	28.6	31.47
California Buckwheat Alluvial Fan Association	7.09	2.6	0	7.47
Impacts to the WSPA ^a	(12.44)	(12.44)	(0)	(0)
Total RAFSS Impacts	109.61	118.39	110.41	113.94
Southern Riparian scrub	2.08	1.93	1.35	1.95
Black Willow Series	0.32	0.32	0.13	0.013
Mule Fat and Disturbed Mule Fat Series	0.34	0	0	0.19
Freemont Cottonwood Series	0.29	0.29	0	0
California Sycamore Series	0	0	0	0.04
Tamarisk Series	0	0	0	0.01
Ruderal Vegetation	10.33	8.68	14.92	12.88
Open Water	0.46	0.24	0.46	0.46
Total, Other Natural Areas	13.36	11.46	16.86	15.543
Ornamental Landscape	3.59	2.65	0.04	0.04
Cultivated Agriculture	50.35	50.96	44.61	45.8
Developed/Disturbed	29.22	35.06	23.95	23.52
Total, other manmade acres	83.16	88.67	68.6	69.36
TOTAL	206.13	218.52	195.87	198.843
Permanent Impacts from a 20 foot wide access road				
Pioneer and Disturbed Pioneer RAFSS	1.96	0	2.02	1.98
Intermediate and Disturbed Intermediate RAFSS	2.53	2.55	4.05	3.03
Mature RAFSS	2.27	3.4	2.3	2.46
California Buckwheat Alluvial Fan Association	0	0	0	0.17
Total RAFSS Impacts	6.76	5.95	8.37	7.64
Southern Riparian scrub	0.27	0.27	0.11	0.22
Black Willow Series	0.01	0.01	0.01	0.01
Mule Fat and Disturbed Mule Fat Series	0	0	0	0.01
Freemont Cottonwood Series	0.08	0.09	0	0
California Sycamore Series	0	0	0	0
Tamarisk Series	0	0	0	0
Ruderal Vegetation	0.11	0.09	0.64	0.3
Open Water	0.03	0	0.03	0.03
Total, Other Natural Areas	0.5	0.46	0.79	0.57

**TABLE 3.3-4 (Continued)
AFFECTED HABITAT ACREAGE**

Vegetation Type	Alternative Alignment 1	Alternative Alignment 2	Alternative Alignment 3	Alternative Alignment 4
Ornamental Landscape	0.01	0.01	0	0
Cultivated Agriculture	1.39	1.39	0.99	0.99
Developed/Disturbed	2.12	1.77	2.26	2.12
Total, other manmade acres	3.52	3.17	3.25	3.11
TOTAL	10.78	9.58	12.41	11.32

^a Impacts to WSPA vegetation types is accounted for in the RAFFS impacts. The 12.44 acres is not independently apart of a summary calculation.

SOURCE: ESA, 2008

The impacts to the federally and state-listed species within the WSPA would be temporary. No permanent removal of habitat would occur within the WSPA since roadways would be prohibited. Permanent impacts to RAFFS would occur only in areas where maintenance roads are constructed. Approximately 5.95 to 8.37 acres of RAFFS habitat would be permanently affected by the project due to the construction and maintenance of access roads and valve surface structures, depending on the selected alternative alignment.

The FESA does not offer the same prohibition against take of listed plants species that it affords to listed wildlife species. Impacts on federally-listed plant species, however do need to be considered in FESA take authorizations for listed wildlife. The CESA does provide protection of state-listed plant species similarly to wildlife species and would require a take permit pursuant to California Fish and Game Code CESA Section 2081. The CDFG can provide take authorization through a consistency determination with the FESA permitting action for co-listed species to minimize permitting redundancy.

Fundamentally, the USFWS and CDFG cannot issue take authorization that would jeopardize the continued existence of listed or proposed for listing endangered or threatened species. In issuing take authorization the USFWS and CDFG would require that impacts are avoided and minimized to the maximum extent feasible. For unavoidable impacts, compensation would be required to offset the temporary and permanent loss of habitat functions and values. In requiring implementation of permit conditions and mitigation measures to avoid, minimize, and compensate for impacts on the species and/or habitat, the species would be left in conditions as good or as better than pre-project conditions. As such, FESA and CESA regulatory compliance would suffice to reduce potentially significant impacts through implementation of measures to avoid, minimize, and compensate for impacts on listed species.

DWR will be required to provide proof of compliance with the FESA and CESA for potential impacts on the federal and state listed endangered species in the form of a take permit/authorization or written documentation from the USFWS and CDFG that the proposed project would not result in take of the species or would otherwise not adversely affect the species.

Should a take permit/authorization be required, or conditions imposed by the USFWS and CDFG to ensure that no take would result from the project, DWR would be required to implement all the terms and conditions of the USFWS and CDFG permit, authorization, or recommendations to the satisfaction of the USFWS and CDFG. In order to reduce impacts on the listed species, and to ensure compliance with FESA and CESA, the following mitigation measures shall be implemented.

Given the presence of formally listed Santa Ana River woollystar and slender-horned spineflower and other special-status plant species within the various expressions of RAFSS, the mitigation measures below shall be implemented to reduce potentially significant impacts and to ensure that minimum standards of mitigation are set forth for the listed plant species.

Mitigation Measures

BIO-1: DWR shall have a qualified biologist conduct a pre-construction spring/summer floristic inventory and rare plant survey of the selected alternative to determine and map the location and extent of special-status plant species populations within the construction right-of-way.

BIO-2: DWR shall minimize impacts on special-status plant species by reducing the construction right-of-way through areas with documented occurrences of special-status plant species.

BIO-3: DWR shall stake, flag, fence, or otherwise clearly delineate the construction right-of-way that restricts the limits of construction to the minimum necessary to implement the project that also would minimize impacts on special-status plants and RAFSS habitat.

BIO-4: DWR shall salvage and stockpile the top 12 inches of soil in the construction zone, including plant material and duff for use in the restoration efforts.

BIO-5: DWR shall prepare and implement a special-status species and RAFSS habitat restoration plan, approved by the USFWS and CDFG for unavoidable temporary impacts on special-status plants and RAFSS habitat that includes at a minimum the following measures:

- The results of the floristic inventory and rare plant survey that documents the location and extent of special-status plant species occurrences and quantifies the temporary and permanent impacts based on acres of habitat, individual plants, and/or other means to clearly articulate the unavoidable impacts.
- A restoration plan for areas of temporary impact that includes:
 - Goals and objectives for the RAFSS and special-status plant species restoration plan that establishes the quantifiable criteria for successful implementation and completion of the restoration plan.
 - A salvage and replacement program for the top 12 inches of surface material and topsoil including plant material and duff. The program will identify soil preparation requirements including grain size that will need to be engineered or

amended on site to match to the greatest extent feasible the existing surface soil conditions.

- A salvage and replanting program for perennial special-status species.
- An invasive plant species maintenance, monitoring, and removal program.
- Success criteria that establishes yearly thresholds for growth and reestablishment of RAFSS habitat.
- Success criteria that establishes yearly thresholds for growth and establishment of special-status plant species on an acreage extent of occurrence or per plant basis.
- Success criteria that establishes the ultimate threshold for meeting the goals, objectives, and FESA/CESA permit conditions.
- A five-year maintenance and monitoring plan to ensure successful implementation of the restoration plan and meeting the goals, objectives, and FESA/CESA permit conditions.

BIO-6: DWR shall prepare and implement a special-status species and RAFSS habitat compensation plan, approved by the USFWS and CDFG, for unavoidable permanent impacts on special-status plants within RAFSS habitat that includes at a minimum the following measure:

- Purchase of compensatory mitigation lands or credits at a USFWS and CDFG approved conservation bank at a minimum 2:1 ratio (or that required by the USFWS and CDFG permit conditions) for the preservation in perpetuity and dedication in deed restriction, conservation easement, or some other suitable land conservation instrument over RAFSS habitat with known occurrences of Santa Ana River woollystar and slender-horned spineflower.

Significance Conclusion

Less than significant with mitigation. Implementation of the above listed mitigation measures and any permit conditions issued by USFWS and CDFG, would reduce potentially significant take of a sensitive species to a less-than-significant level. Impacts would be less than significant.

San Bernardino Kangaroo Rat and Other Special-Status Ground Dwelling Wildlife Species

The setting section describes the documented presence of the federally listed endangered SBKR within the RAFSS habitat in the project alternative alignment areas. The proposed project would result in both temporary (up to three-years of construction and upwards of five-years for habitat restoration to succeed) and permanent impacts on RAFSS habitat. Nighttime construction could also result in take and harassment as the SBKR are a nocturnal species. Temporary habitat destruction would occur within the approximately 250-foot wide construction zone. Permanent habitat destruction would occur within an approximately 20-foot wide zone that would be required as a permanent maintenance road. Because of their documented occurrence in the project area, the SBKR are presumed to have the potential to occur in all seral stages of RAFSS within the project alternative alignments. They are resident species that can shift precinct locations within suitable areas in response to local habitat conditions. Actual acreages impacted by the

project will depend on the width of the construction zone through RAFSS habitat and the actual occurrence of the SBKR as confirmed through pre-construction surveys. Table 3.3-4 provides calculated acreages of project impact assuming a 250-foot wide construction zone. Through RAFSS habitat.

Field studies have identified the occurrence of the California Species of Concern two-striped garter snake near the Santa Ana River, and the low to high probability of occurrence for the silvery legless lizard, orange-throated whiptail, California mountain king snake, coast (San Diego) horned lizard, northwestern San Diego pocket mouse, Los Angeles pocket mouse, and American badger. These species are localized ground dwelling residents of the RAFSS habitat in the project region. Similar to the SBKR, both temporary (up to three-years of construction and upwards of five-years for habitat restoration efforts to succeed) and permanent impacts on the various seral stages of RAFSS habitat would result in the loss of habitat for these species to the extent they occur within the project alternative alignment areas.

Fundamentally, the USFWS cannot issue take authorization that would jeopardize the continued existence of listed or proposed for listing endangered or threatened species. In issuing take authorization the USFWS would require that impacts are avoided and minimized to the maximum extent feasible. For unavoidable impacts, compensation would be required to offset the permanent loss of habitat functions and values. In requiring implementation of permit conditions and mitigation measures to avoid, minimize and compensate for impacts on the SBKR and/or its habitat, the species would be left as good as or better than pre-project conditions. As such, FESA and CESA regulatory compliance would suffice to reduce potentially significant impacts through implementation of measures to avoid, minimize, and compensate for impacts on listed species.

DWR would be required to provide proof of compliance with the FESA and CESA for potential impacts on the federal and state listed endangered species in the form of a take permit/authorization or written documentation from the USFWS and CDFG that the proposed project would not result in take of the species or would otherwise not adversely affect the species. In order to reduce impacts and to ensure that minimum standards of mitigation are set forth for the SBKR, RAFSS habitat, and special-status ground dwelling species, the following mitigation measures shall be implemented.

Given the presence of the formally listed SBKR and other special-status ground dwelling species within the various seral expressions of RAFSS, the mitigation measures below shall be implemented to reduce potentially significant impacts and to ensure that minimum standards of mitigation are set forth for the listed plant species.

Mitigation Measures

BIO-7: DWR shall have a qualified biologist conduct a pre-construction protocol survey for the SBKR within the selected alternative alignment to determine and map the location and extent of SBKR occurrence(s) within the construction right-of-way.

BIO-8: DWR shall have a qualified biologist conduct a pre-construction spring/summer active season general reconnaissance and trapping surveys for the special-status ground

dwelling species within the selected alternative alignment to determine and map the location and extent of special-status species occurrence(s) within the construction right-of-way.

BIO-9: DWR shall minimize impacts on SBKR and other special-status ground dwelling species by reducing the construction right-of-way through areas of potential occurrences.

BIO-10: DWR shall stake, flag, fence, or otherwise clearly delineate the construction right-of-way that restricts the limits of construction to the minimum necessary to implement the project that also would minimize impacts on special-status wildlife species and RAFSS habitat.

BIO-11: DWR shall install a silt fence or some other impermeable barrier to SBKR to exclude SBKR and other small wildlife species from entering the active work areas. Exclusion fencing can be limited to areas of documented occurrences of special status wildlife. Exclusion fencing shall be required during all nighttime construction activities.

BIO-12: If approved by the USFWS, DWR shall have qualified biologists permitted or otherwise approved by the USFWS conduct a pre-construction SBKR trapping and relocation effort to minimize take of the SBKR during construction.

BIO-13: If approved by the USFWS, DWR shall have qualified biologists permitted or otherwise approved by the USFWS conduct construction monitoring to capture and relocate SBKR out of harms way as an effort to further minimize take of the SBKR during construction.

BIO-14: DWR shall have a qualified biologist conduct pre-construction and construction capture, salvage, and relocation effort to remove special-status ground dwelling wildlife species, and other common species, out of harms way to minimize impacts on these species.

BIO-15: DWR shall prepare and implement a special-status wildlife species and RAFSS habitat restoration plan as a part of that specified for special-status plants in Mitigation Measure BIO-5, approved by the USFWS for unavoidable temporary impacts on special-status wildlife species and RAFSS habitat that includes at a minimum the following measures:

- The results of the pre-construction surveys that documents the location and extent of special-status ground dwelling wildlife species occurrences and quantifies the temporary and permanent impacts based on acres of occupied habitat, and/or other means to clearly articulate the unavoidable impacts.
- A restoration plan for areas of temporary impact that shall be consistent with that prepared for the special-status plant species in Mitigation Measure BIO-5 and that includes at a minimum:
 - Goals and objectives for the RAFSS and special-status wildlife species restoration plan that establishes the quantifiable criteria for successful implementation and completion of the restoration plan.
 - An invasive plant species maintenance, monitoring, and removal program.

- Success criteria that establishes yearly thresholds for growth and reestablishment of suitable SBKR RAFSS habitat on an acreage basis.
- Success criteria that establish the ultimate threshold for meeting the goals, objectives, and FESA permit conditions.
- A minimum five-year maintenance and monitoring plan to ensure successful implementation of the restoration plan and meeting the goals, objectives, and FESA permit conditions.

BIO-16: DWR shall prepare and implement a special-status wildlife species and RAFSS habitat compensation plan, approved by the USFWS for unavoidable permanent impacts on SBKR and special-status ground dwelling wildlife species occurring within RAFSS habitat that includes at a minimum the following measure:

- Purchase of compensatory mitigation lands or credits at a USFWS approved conservation bank at a ratio of 2:1 or as required by the USFWS and permit conditions for the preservation in perpetuity and dedication in deed restriction, conservation easement, or some other suitable land conservation instrument over RAFSS habitat with known occurrences of SBKR. This compensatory mitigation can be satisfied under the same habitat acquisition/conservation credit program under Mitigation Measure BIO-6 as approved by USFWS and compatible for both the impacted plant and wildlife species and RAFSS habitat.

Significance Conclusion

Less than significant with mitigation. Implementation of the above listed mitigation measures and any permit conditions issued by USFWS and CDFG would reduce potentially significant impacts to a less-than-significant level. Impacts would be less than significant.

California Gnatcatcher, White-Tailed Kite, Other Nesting Birds, and Special-Status Bats

The setting section documents the presence of the federally listed threatened coastal California gnatcatcher within the various seral stages of RAFSS habitat in the project alternative alignment areas. In addition, field studies have identified the occurrence or potential for occurrence of white-tailed kite, California Species of Concern Cooper's hawk, southern California rufous-crowned sparrow, burrowing owl, yellow warbler, California horned lark, loggerhead shrike, pallid bat, and California western mastiff bat within the RAFSS habitat in the project area. These species are mobile resident and seasonal migrants through the RAFSS habitat in the project region. Similar to the coastal California gnatcatcher, both temporary (up to two-years) and permanent impacts on the various seral stages of RAFSS habitat would result in the loss of habitat for these species to the extent they occur within the project alternative alignment areas.

Given the presence of the formally listed coastal California gnatcatcher and other special-status bird and bat species within the various seral expressions of RAFSS, impacts to species and habitat could be considered significant. Furthermore, the CDFG Code Sections 3503 and 3503.5 and the Federal Migratory Bird Treaty Act (MBTA) of 1918 prohibit the possession and destruction of birds, nests, and/or their eggs. Implementation of the following mitigation measures would reduce potentially significant impacts.

Fundamentally, the USFWS cannot issue take authorization that would jeopardize the continued existence of listed or proposed for listing endangered or threatened species. In issuing take authorization the USFWS would require that impacts are avoided and minimized to the maximum extent feasible. For unavoidable impacts, compensation would be required to offset permanent loss of habitat functions and values. In requiring implementation of permit conditions and mitigation measures to avoid, minimize and compensate for impacts on the coastal California gnatcatcher and/or its habitat, the species would be left as good as or better than pre-project conditions. As such, FESA regulatory compliance would reduce potentially significant impacts to a less-than-significant level through implementation of measures to avoid, minimize, and compensate for impacts on listed species.

DWR shall provide proof of compliance with the federal Endangered Species Act for potential impacts on the coastal California gnatcatcher in the form of written documentation from the USFWS that the proposed project would not result in take of the coastal California gnatcatcher or would otherwise not adversely affect the species. Should a take permit/authorization be required, or conditions imposed by the USFWS to ensure that no jeopardy would result from the project, the applicant shall implement all the terms and conditions of the USFWS permit, authorization, or recommendations to the satisfaction of the USFWS.

The proposed project alternative alignment areas would also impact and/or cross through orchard, ruderal disturbed, and developed areas. These habitat types do not typically support special-status species or provide suitable habitat for special-status species. Additionally, these habitats typically provide only low quality habitat values for native plant and wildlife species and do not represent substantial biological resources. Although these areas are not anticipated to harbor any special-status species, small shrubs and trees could support nesting or foraging birds protected by the fish and Game Code and/or Migratory Bird Treaty Act. Removal of trees or shrubs that provide nesting habitat could result in the direct mortality of birds. Implementation of the following mitigation measure would reduce potentially significant impacts on nesting birds.

In order to reduce potentially significant impacts to a less-than-significant level, and to ensure that minimum standards of mitigation are set forth for the coastal California gnatcatcher and special-status mobile bird and bat species, the following mitigation measures shall be implemented.

Mitigation Measures

BIO-17: DWR shall have a qualified biologist conduct a pre-construction nesting season protocol survey for the coastal California gnatcatcher within the selected alternative to determine and map the location and extent of nesting coastal California gnatcatcher occurrence(s) within the construction right-of-way.

BIO-18: DWR shall have a qualified biologist conduct a pre-construction spring/summer active season general reconnaissance for nesting/roosting special-status mobile bird and bat species, and other nesting birds within the selected alternative alignment to determine and map the location and extent of special-status species occurrence(s).

BIO-19: DWR shall avoid direct impacts on nesting coastal California gnatcatchers and any nesting birds located within the construction right of way. This could be accomplished by establishing the construction right of way and removal of plant material outside of the typical breeding bird season (February 1 through August 31).

BIO-20: If construction and vegetation removal is proposed for the bird nesting period February 1 through August 31, then active nest sites located during the pre-construction surveys shall be avoided and a non-disturbance buffer zone established dependent on the species and as approved by the USFWS and CDFG. Nest sites shall be avoided with approved non-disturbance buffer zones until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.

BIO-21: If a natal bat roost site is located during pre-construction surveys, it shall be avoided with non-disturbance buffer zone established by a qualified biologist until the site is abandoned.

BIO-22: DWR shall minimize impacts on documented locations of nesting coastal California gnatcatchers and any nesting birds by reducing the construction right-of-way through areas of known occurrences.

BIO-23: DWR shall stake, flag, fence, or otherwise clearly delineate the construction right-of-way that restricts the limits of construction to the minimum necessary to implement the project that also minimize impacts on special-status bird and bat species, and RAFSS habitat.

BIO-24: DWR shall prepare and implement a special-status bird and bat species and RAFSS habitat restoration plan, approved by the USFWS for unavoidable temporary impacts on special-status bird and bat species and RAFSS habitat as a part of that specified for special-status plants and ground dwelling wildlife in mitigation measures **BIO-5** and **BIO-15**. The plan shall include the results of the pre-construction surveys that documents the location and extent of nesting/roosting special-status bird and bat species and quantifies the temporary and permanent impacts based on acres of occupied habitat, and/or other means to clearly articulate the unavoidable impacts. Compensatory mitigation for the coastal California gnatcatcher can be satisfied under the same habitat restoration and enhancement measures and acquisition/conservation credit program described under Mitigation Measures BIO-6 as approved by USFWS and compatible for both the impacted plant and wildlife species and RAFSS habitat.

Significance Conclusion

Less than significant with mitigation. Implementation of the above listed mitigation measures and any permit conditions issued by USFWS and CDFG would reduce potentially significant impacts to a less-than-significant level. Impacts would be less than significant.

Santa Ana Sucker and Santa Ana Speckled Dace

As described above, both the federally endangered Santa Ana sucker and California Species of Concern Santa Ana speckled dace reside in the Santa Ana River. However, the Santa Ana sucker currently only occurs many miles downstream of the project site where the population is blocked by a migration barrier. Impacts to the Santa Ana sucker would be less than significant as the project site does not support the species.

The Santa Ana speckled dace has a high potential to occur at the project site. While the Santa Ana speckled dace does not have federal or state protection under the FESA or CESA, it is a California Species of Concern. Diverting and dewatering the Santa Ana River for the installation of the underground pipeline has the potential to have a significant impact on the Santa Ana speckled dace. Implementation of the Mitigation Measures BIO-25 will reduce impacts to a less-than-significant level.

Mitigation Measures

BIO-25: During initial Santa Ana River diversion and dewatering, a qualified biologist shall be onsite to capture and relocate any Santa Ana speckled dace or other fish species that may be within the dewatered construction area. The relocation site selected by the biologist shall have similar habitat characteristics as the construction site prior to dewatering.

Significance Conclusion

Less than significant with mitigation. Compliance with the above listed mitigation measure would ensure impacts are less than significant. Impacts would be reduced to a less-than-significant level because take of the listed Santa Ana sucker would be avoided.

3.3.5.2 Wetlands and Waters of the U.S./State

This section discusses the following CEQA Checklist questions:

Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS?

Significance Threshold

The proposed project would have a significant impact if construction or operation of the project would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption or other means. For the purpose of this EIR analysis, the proposed project would have a significant impact if the project would result in the removal, fill, or hydrological interruption of wetlands as defined by the Section 404 of the Clean Water Act during the construction or operation of the proposed project.

Impact Analysis

The proposed project pipeline alternative alignments cross the Santa Ana River and tributary drainages. Trenching, stockpiling, and backfilling for pipeline placement would result in

construction related impacts on potential waters of the U.S. and waters of the state. Some of the pipeline alternative alignments may cross or impact some of the many constructed percolation ponds and connecting channels in the area. According to the SBVWCD, the percolation ponds are not jurisdictional waters and, therefore, not subject to regulation nor require permits from the regulatory agencies or mitigation for their operations and maintenance activities.

DWR shall obtain Clean Water Act regulatory compliance in the form of a permit from the USACE or written documentation from the USACE that no permit would be required for excavation and backfill activities within the Santa Ana River and tributary drainages. Should a permit be required, DWR shall implement all the terms and conditions of the USACE permit. In permitting projects, the USACE seeks to meet the goal of no net loss of functions and values of wetlands and other waters of the U.S. and would require at a minimum the restoration of disturbed areas to original contours and a re-vegetation program to restore the disturbed habitat. Compliance with the USACE permit/authorization will require obtaining the Clean Water Act Section 401 Water Quality Certification from the California Regional Water Quality Control Board.

DWR shall obtain California Fish and Game Code Section 1602 compliance in the form of a completed Streambed Alteration Agreement or written documentation from the CDFG that no agreement would be required for excavation and backfill activities within the Santa Ana River and tributary drainages. Should an agreement be required, DWR shall implement all the terms and conditions of the CDFG Streambed Alteration Agreement.

Mitigation Measures

No specific mitigation is required beyond compliance with the law.

Significance Conclusion

Less than significant with mitigation. Compliance with the USACE, RWQCB, and CDFG regulations, listed above, would ensure impacts are less than significant. Permit requirements from these agencies would reduce impacts to a less-than-significant level through implementation of measures to avoid and minimize impacts and restore waters of the U.S. and waters of the state.

3.3.5.3 Wildlife Movement Corridors

This section discusses the following CEQA Checklist question:

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Significance Threshold

The proposed project would have a significant impact if construction or operation of the project would have a substantial adverse effect on the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. For the purpose of this EIR analysis, a substantial adverse impact would occur if the project would result in fragmentation of a habitat, removal of a wildlife nursery site, or blockage between two large areas of habitat inhibiting the safe movement of mammals and other wildlife species from one habitat area to another. Substantial impacts would also include any blockage, diversion, or barrier to watersheds and drainages, specifically the Santa Ana River, Santa Ana River wash, and its tributary Mill Creek.

Impact Analysis

The Santa Ana River wash and its tributary Mill Creek provide a significant wildlife corridor in an increasingly urbanized region. They provide connective corridors between areas of the San Bernardino National Forest, on the north and east, and Crafton Hills to the South. Given the expanse of upland habitat along the project alignments, impacts on the movement of upland species through the project area would be considered a less-than-significant impact.

According to the project description (see Section 2.4.1), any of the four proposed pipeline alternative alignments would require a diversion of the Santa Ana River. Pipeline installation is expected to proceed at a rate of approximately 80 feet per day. Crossing the Santa Ana River active channel may require diversion of stream flows around the construction zone, if surface water is present at the time of construction. This diversion would be necessary for a maximum of twelve weeks and would occur during the dry season when flood flows would not be expected. If groundwater is encountered during excavation, the trench would require dewatering. Discharges from trench dewatering would comply with the Santa Ana RWQCB requirements. A diversion of the Santa Ana River could interfere with the movement of native resident or migratory fish species and could impede the use of native wildlife nursery sites. However, the diversion would last approximately 12 weeks. Following construction the streambed would be restored to its original condition and the wildlife corridor would be restored. Minimizing the duration of the diversion would minimize the impact to aquatic species. The Santa Ana sucker is not expected to occur in the project area but there is some potential for the Santa Ana speckled dace to occur in the area.

In order to reduce potentially significant impacts to a less-than-significant level, the following mitigation measure shall be implemented.

Mitigation Measures

BIO-26: The active Santa Ana River channel shall be restored to pre-construction width, contours, and gradient following construction to insure that no barriers to the free upstream and downstream movement of aquatic life occur after construction.

Significance Conclusion

Less than significant with mitigation. Compliance with the above listed mitigation measures would ensure impacts are less than significant. This mitigation will ensure that the finished grade is the same as pre-construction contours allowing the site to remain as a migration corridor.

3.3.5.4 Local Policies, Ordinances, and Habitat Conservation Plans

This section discusses the following CEQA Checklist questions:

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Significance Threshold

The proposed project would have a significant impact if construction or operation of the project would conflict with any local policies or ordinances protecting biological resources, the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional or state habitat conservation plan. For the purpose of this EIR analysis, a significant impact would result if the project conflicts with any local policies or ordinances, removes or disturbs habitat within an adopted HCP, NCCP, or other approved local, regional or state HCP.

Impact Analysis

The proposed project is not located within a federally adopted HCP or a NCCP or within a Significant Ecological Area.

The proposed project is located within the WSPA, established in 1988 by the USACE and local sponsors as mitigation for the construction of the Seven Oaks Dam upstream. As discussed in 3.3.5.1, the proposed project would result in both temporary (up to two-years) and permanent impacts to RAFSS, the Santa Ana woollystar and the slender horned spineflower (federal and state endangered plants that occur only along the Santa Ana River). With the incorporation of Mitigation Measures BIO-1 through BIO-6 (see section 3.3.5.1) any impacts to this local preservation area are less than significant.

Mitigation Measures

Implementation of Mitigation Measures BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, and BIO-6.

Significance Conclusion

Less than significant with mitigation. Compliance with the above listed mitigation measures would ensure impacts are less than significant. The mitigation measures would ensure that the project is consistent with all local policies, ordinances, and plans.

3.3.6 Mitigation Measure Summary Table

Table 3.3-5 presents the impacts and mitigation summary for Biological Resources.

**TABLE 3.3-5
IMPACTS AND MITIGATION SUMMARY**

Proposed Project Impact	Mitigation Measure	Significance after Mitigation
Sensitive Species and Habitats: The proposed project would have a less-than-significant impact on riparian habitats or other sensitive natural communities identified in local or regional plans, policies, regulations, or by the CDFG or USFWS with implementation of mitigation measures.	BIO-1 through BIO-25	Less than significant
Wetlands and Waters of the U.S./State: The proposed project would have a less-than-significant effect on federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means with implementation of mitigation measures.	None required	Less than significant
Wildlife Movement Corridors: The proposed project would have a less-than-significant impact on wildlife movement corridors with implementation of mitigation measures.	BIO-26	Less than significant
Local Policies, Ordinances, and Habitat Conservation Plans: The project would be consistent with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, with implementation of mitigation measures. Also the project would be consistent with the provisions of adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan with implementation of mitigation measures.	Implement BIO-1, BIO-2, BIO-3, BIO-4, BIO-5 and BIO-6	Less than significant

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3.4 Cultural Resources

This section discusses cultural and paleontological resources within the proposed project's Area of Potential Effect (APE), addresses existing conditions, applicable regulations, and the potential for significant impacts associated with the project. The APE is defined as the area that may be potentially impacted by the project. Impacts can be direct, such as destruction of a building or structure, or mechanical trenching through an archaeological site. Impacts can also be indirect, such as increased access to an area that contains prehistoric sites that may be subject to looting or vandalism. The APE for this project includes four pipeline Alternative Alignments (A1, A2, A3 and A4), the proposed location of the Citrus Pump Station and Citrus Reservoir, as well as the proposed Crafton Hills Pump Station expansion. For purposes of this analysis, the APE for the pipeline alternative alignments consists of a 500-foot-wide corridor centered on the proposed trench for the pipe. The actual APE may be reduced when the construction corridor is more clearly defined. The APE also consists of the construction area required for the Citrus Pump Station and proposed Citrus Reservoir.

Cultural resources include prehistoric resources, Native American resources, and historical-period resources. Prehistoric resources are physical properties resulting from human activities that predate written records and are generally identified as isolated finds or sites. Prehistoric resources can include village sites, temporary camps, lithic (stone tool) scatters, roasting pits/hearths, milling features, rock features, and burials.

Native American resources are sites, areas, and materials important to Native Americans for religious, spiritual, or traditional reasons. These resources may include villages, burials, rock art, rock features, or spring locations. Fundamental to Native American religions is the belief in the sacred character of physical places, such as mountain peaks, springs, or burials. Traditional rituals may also prescribe the use of particular native plants, animals, or minerals that may be found in certain locations. Developments that may affect sacred areas, their accessibility, or the availability of materials used in traditional practices are considered when identifying these resources.

Historic resources consist of physical properties, structures, or built items resulting from human activities after the time of written records. In California, the historical-period is generally considered to be equivalent to the time period following European contact, beginning in the late 1700s. Historic resources can include houses, cabins, barns, lighthouses, early military structures, and civic structures, such as missions, post offices, and meeting halls.

Paleontology is a branch of geology that studies the life forms of the past, especially prehistoric life forms, through the study of plant and animal fossils. Paleontological resources represent a limited, non-renewable, and impact-sensitive scientific and educational resource. As defined in this section, paleontological resources are the fossilized remains or traces of multi-cellular invertebrate and vertebrate animals and multi-cellular plants, including their imprints from a previous geologic period. Fossil remains such as bones, teeth, shells, and leaves are found in the geologic deposits (rock formations) where they were originally buried. Paleontological resources include not only the actual fossil remains, but also the collecting localities, and the geologic formations containing those localities.

3.4.1 Regulatory Framework

Numerous laws and regulations require federal, State, and local agencies to consider the effects a project may have on cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the various agencies proposing the action, and prescribe the relationship among other involved agencies (e.g., State Historic Preservation Office and the Advisory Council on Historic Preservation). The National Historic Preservation Act (NHPA) of 1966, as amended; CEQA; and the California Register of Historical Resources, Public Resources Code (PRC) 5024, are the primary federal and State laws governing and affecting preservation of cultural resources of national, State, regional, and local significance. The applicable regulations are discussed below.

3.4.1.1 Federal

Cultural resources are considered during federal undertakings chiefly under Section 106 of the NHPA of 1966 (as amended) via its implementing regulation, 36CFR800 (Protection of Historic Properties), as well as the National Environmental Policy Act (NEPA). Properties of traditional, religious, and cultural importance to Native Americans are considered under Section 101(d)(6)(A) of NHPA. Other federal laws include the Archaeological Data Preservation Act of 1974, the American Indian Religious Freedom Act (AIRFA) of 1978, the Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1989, among others.

Section 106 of NHPA (16 U.S.C. 470f) requires federal agencies to take into account the effects of their undertakings on any district, site, building, structure or object that is included in or eligible for inclusion in the National Register Of Historic Places (referred to as an “historic property”) and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings (36CFR800.1). Under Section 106, the significance of any adversely affected historic property is assessed and mitigation measures are proposed to reduce the impacts to an acceptable level. Significant cultural resources are those resources that are listed in, or are eligible for listing on the NRHP per the criteria listed at 36CFR60.4 below.

National Register of Historic Places

First authorized by the Historic Sites Act of 1935, the National Register was established by the National Historic Preservation Act, as “an authoritative guide to be used by Federal, State, and Local governments, private groups and citizens to identify the Nation’s cultural resources and to indicate what properties should be considered for protection from destruction or impairment. (36 CFR 60.2).” The National Register recognizes properties that are significant at the national, state and local levels.

To be eligible for listing in the National Register, a resource must exhibit qualities of significance in American history, architecture, archaeology, engineering, and culture which can be present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

- a. that are associated with events that have made a significant contribution to the broad patterns of our history; or
- b. that are associated with the lives of persons significant in our past; or
- c. that embody the distinctive characteristics of a type, period, or method of construction or that represents the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- d. that have yielded, or may be likely to yield, information important in prehistory or history.

A property eligible for listing in the National Register must meet one or more of the four criteria (a-d) defined above. In addition, unless the resource possesses exceptional significance, it must be at least fifty-years old to be eligible for National Register listing.

3.4.1.2 State

The State implements the NHPA through its statewide comprehensive cultural resources surveys and preservation programs. The California Office of Historic Preservation (OHP), as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historic Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the State's jurisdictions.

California Register of Historical Resources

The California Register of Historical Resources (California Register) is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change."¹ The criteria for eligibility for the California Register are based upon National Register criteria.² Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register of Historic Places.³

To be eligible for the California Register of Historical Resources, a prehistoric or historic period property must be significant at the local, state, and/or federal level under one or more of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

¹ California Public Resources Code § 5024.1(a).

² Ibid, § 5024.1(b).

³ Ibid, § 5024.1(d).

- Has yielded, or may be likely to yield, information important in prehistory or history.

A resource eligible for the California Register must meet one of the criteria of significance described above, and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. It is possible that a historic resource may not retain sufficient integrity to meet the criteria for listing in the National Register, but it may still be eligible for listing in the California Register.

Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed on the National Register of Historic Places and those formally Determined Eligible for the National Register of Historic Places.
- California Registered Historical Landmarks from No. 770 onward.
- Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the California Register.

Other resources that may be nominated to the California Register include:

- Historical resources with a significance rating of Category 3 through 5.4
- Individual historical resources.
- Historical resources contributing to historic districts.
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

California Environmental Quality Act

CEQA is the principal statute governing environmental review of projects occurring in the State. CEQA requires lead agencies to determine if a proposed project would have a significant effect on archaeological resources. CEQA is codified at Public Resources Code sec. 21000 et seq. As defined in Section 21083.2 of CEQA a “unique” archaeological resource is an archaeological artifact, object, or site, about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

⁴ Those properties identified as eligible for listing in the National Register of Historic Places, the California Register of Historical Resources, and/or a local jurisdiction register.

In addition, the *State CEQA Guidelines* recognize that certain historical resources may also have significance. The Guidelines recognize that a historical resource includes: (1) a resource in the California Register of Historical Resources; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of Section 21084.1 of CEQA and Section 15064.5 of the *State CEQA Guidelines* apply. If an archaeological site does not meet the criteria for a historical resource contained in the *State CEQA Guidelines*, then the site is to be treated in accordance with the provisions of CEQA Section 21083, which is a unique archaeological resource. The *State CEQA Guidelines* note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment (*State CEQA Guidelines* Section 15064.5(c)(4)).

3.4.1.3 Local

San Bernardino County General Plan

The Conservation Element of the recently adopted San Bernardino County General Plan (URS, 2007a) governs the natural and cultural resources of the county. The San Bernardino County General Plan has goals related to the protection of cultural and paleontological resources.

Currently there are more than 11,000 prehistoric and historic sites, more than 2,000 historic structures, and more than 3,000 fossil localities recorded in San Bernardino County (henceforth, "The County"). The high numbers of known sites, in addition to the large number of tracts of un-surveyed land within the county, indicate that many more sites remain undocumented. The County has developed a Paleontologic Resource Overlay to assist in the planning process, and consideration of these resources is required.

The City of Redlands

The City of Redlands, henceforth referred to as "The City", through provisions in the City of Redlands Municipal Code, has established processes to preserve its designated historic resources. The provisions of the City of Redlands Municipal Code relative to historic preservation (Section 3.0 City Design and Preservation Element), present a planning tool to promote the public health, safety and general welfare of its constituents by providing for the preservation, identification, protection, enhancement and perpetuation of existing historic resources.

Classification of Historic Resources

Historic resources in Redlands are divided into five categories: landmarks, historic properties, historic and scenic districts, historic and scenic thematic collections, and urban conservation districts.

1. A landmark is defined as a building, site, or area with exceptional character or exceptional historic or aesthetic interest or value as part of the development, heritage, or cultural characteristics of the City, state, or nation.
2. An historic property is a structure or site that has significant historic, architectural, or cultural value.
3. An historic and scenic district is a significant neighborhood, agricultural or passive recreational open space, enclave or collection of historical buildings that may have been part of one settlement, architectural period, or era of development.
4. An historic or scenic thematic collection is a collection of significant sites or buildings which are not necessarily located together in the same geographical area, but are linked by a historical or architectural theme.
5. An urban conservation district is a residential or commercial neighborhood which meets the designation criteria, but contains a significant proportion of non-historic properties, and which the City wishes to maintain and revitalize.

Historic and Scenic Preservation Ordinance

The Redlands Historic and Scenic Preservation Ordinance provides a way for the City to recognize and protect its historic resources. The Ordinance establishes a process for designating historic resources and reviewing alterations to the exterior of these resources. Because there are a large number of resources and because designating them is a time-consuming process, the Ordinance provides for the Historic and Scenic Preservation Commission to place all potential resources on a list of “nominated resources.” An application to alter the exterior of a nominated resource activates the designation procedure, thus ensuring protection of historic resources that the City has not yet been able to designate.

The Commission is responsible for seeing to it that the properties on the list are surveyed, using generally accepted survey methods to identify and describe each historic resource. The Commission then prepares a report using this information to determine whether a resource is significant and, therefore, should be officially recognized as a designated resource. The criteria, any one of which may be used to determine such designation, are as follows:

- It has significant character, interest, or value as part of the development, heritage, or cultural characteristics of the City of Redlands, State of California, or the United States;
- It is the site of a significant historic event;
- It is strongly identified with a person or persons who significantly contributed to the culture, history, or development of the City;
- It is one of the few remaining examples in the City possessing distinguishing characteristics of an architectural type or specimen;

- It is a notable work of an architect or master builder whose individual work has significantly influenced the development of the City;
- It embodies elements of architectural design, detail, materials, or craftsmanship that represent a significant architectural innovation;
- It has a unique location or singular physical characteristics representing an established and familiar visual feature of a neighborhood, community, or the City;
- It has a unique design or detailing;
- It is a particularly good example of a period or style;
- It contributes to the historical or scenic heritage or historical or scenic properties of the City (to include, but not limited to landscaping, light standards, trees, curbing, and signs);
- It is located within an historic and scenic or urban conservation district, being a geographically definable area that possesses a concentration of historic or scenic properties which contribute to each other and are unified aesthetically by plan or physical development.

Before a property or district is designated as a significant historic resource, the Commission must hold a public hearing and make a recommendation to the City Council. The Council then holds its own public hearing and makes the final decision on designating the property. All designated properties are put on the City's Register of Historic and Scenic Resources.

Redlands' Municipal Code gives the City authority to designate without consent of the owner. This authority has been established by the U.S. Supreme Court decision in the Penn-Central case (1978) and by analogy with land-use law. The challenge here is to balance preservation goals and the needs of the community as a whole with the need to bring property owners into the preservation process in a positive fashion. Just as a property owner cannot veto zoning restrictions, historic resource designations are not subject to an owner's veto. If the owner can show that preservation of the building is a hardship (not including loss of profit), both the Penn-Central precedent and Redlands' code allow the possibility of demolition. The City of Redlands also provides certain benefits to owners of historic properties, including fee reductions for City permits. The effect of designation is to create an overlay, imposing design review and other regulations on designated property. The underlying zoning regulations still apply.

3.4.2 Regional Setting

3.4.2.1 Environmental Setting

The project area lies in the San Bernardino Valley region at an elevation ranging from 1,300 to 2,300 feet amsl in the southwestern Mojave Desert, in San Bernardino County, California. The project alternative alignments bisect portions of the towns of East Highlands, Redlands, and the unincorporated town of Mentone. A majority of the project to the west is located in the Santa Ana Wash with the remainder running adjacent and parallel to Mill Creek in the east. Given the project's close proximity to these hydrologic features and its adjacency to urban areas, a significant portion of the APE has been subject to a substantial amount of disturbance. In addition, an industrial park along San Bernardino Avenue and east of Crafton Avenue has been

subjected to further disturbance, including the placement of buildings, access roads, percolation ponds, and bunkers, specifically in relation to the Lockheed Propulsion Company occupation that occurred from 1961 to 1974.

The soil surrounding the APE consists of a sandy, silty alluvium with few pebbles or rocks. However, large cobbles and boulders ranging in size from six inches to three feet in diameter are abundant throughout the project.

3.4.2.2 Prehistoric Context

Although a significant amount of archaeological work has been conducted in the San Bernardino Valley, debate exists over the area's cultural chronology. Seismic activity and flooding disturb or destroy archaeological remains, making it difficult to interpret settlement patterns based on surface inspection alone (Altschul et al. 1984). Despite these shortcomings, Warren (2004) synthesizes the current data and presents a cultural chronology for the greater California Desert Region. Four distinct periods are used to describe the region's prehistory including the Pinto, the Gypsum, the Saratoga Springs, and the Protohistoric.

The Pinto Period governed the study region from approximately 5,000 to 2,000 B.C. Present theory suggests that after the rise in aridity, which occurred at the end of the Pleistocene, a period of reprieve was marked by an increase in moisture around 4,500 B.C. In support of this, Pinto sites are usually located along ephemeral lakes, dry streams, and springs. The sites are often small, lack midden, and are distinguished by limited surface deposits. Such characteristics suggest temporary and seasonal occupation by small groups. Artifacts associated with this period include the Pinto series projectile points known for their rough form, heavy-keeled scrapers, choppers, and an inconsistent usage or presence of flat millingstones and manos. Pinto subsistence relied upon a mixed economy of hunting large and small game, collecting plant foods, and, perhaps, the use of stream resources (Warren 2004).

The Gypsum Period was evident in the Desert Region from 2,000 B.C. to A.D. 500. Gypsum tool technology is characterized by the presence of various projectile points including Humboldt Concave Base, Gypsum Cave, Elko Eared, and Elko Corner-notched. In addition, leaf-shaped points, rectangular-based knives, flake scrapers, T-shaped drills and occasional large scraper-planes, choppers, and hammerstones were present. Manos and millingstones became more prevalent during this period, indicating an increased reliance on hard seeds, and it was during this period that the pestle and mortar were introduced. It is thought that the introduction of the pestle and mortar coincided with the initial usage of mesquite, which further implies a seasonal economy. Other indicative artifacts include shaft smoothers, slate and sandstone pendants and tablets, drilled slate tubes, *Haliotis* rings, beads, and ornaments, *Olivella* shell beads, bone awls, and late in the period, the bow and arrow. The presence of *Haliotis* and *Olivella* suggest that trade was occurring with southern California coastal groups (Warren 2004).

The Saratoga Springs Period occurred from A.D. 500 to 1,200. This period is represented by artifacts including Rose Spring and Eastgate projectile points, millingstones and manos, mortars and pestles, incised stones, and slate pendants. The Rose Spring and Eastgate points are relatively

small projectiles and, therefore, have been associated with bow and arrow usage. It is also evident that trade was occurring between these people and those of the southern coast as shell beads and steatite are present at some sites. An apparent increase in cultural diversification is noted by the presence of turquoise and pottery; items that possibly reflect an Anasazi influence from the east. Despite these influences, the overall cultural pattern throughout the northwest Mojave Desert remained much the same as it was during the Gypsum Period (Warren 2004).

The Protohistoric Period ranged from A.D. 1,200 to historic times and is the last defined prehistoric stage in the Desert Region. This period is characterized by the presence of Desert Side-notched and Cottonwood projectile points. In addition, pottery, steatite shaft straighteners, painted millstones, and shell beads from the California coast were also present at some sites. The apparent abundance of these items is likely a result of the proximity of highly influential trade routes along the Mojave River. It has been suggested that these extensive trade routes were the impetus behind an increasingly complex socioeconomic and sociopolitical organization that occurred around this time. Housepit village sites were located at the headwaters of the Mojave River and in Antelope Valley; however, by the end of this period there was an abandonment of these sites as well as a decline in trade. This marked change is thought to be a result of either the drying up of the lakes that fed the Mojave River or the southward movement of the Chemehuevi across the Mojave River trade route late in this period (Warren 2004).

3.4.2.3 Ethnographic Context

Ethnographically the project area was inhabited by the Serrano and the Cahuilla, two well-studied groups, who belong to the Takic family of the Uto-Aztecan language. The Serrano and Cahuilla were hunters and gatherers who developed a sociopolitical and socioeconomic system that set them apart from the other Uto-Aztecan speakers and linked them more closely to the southern California coastal groups and the Colorado River groups. Both the Serrano and the Cahuilla occupied territories that ranged from low or moderately low desert to the mountain regions of the Transverse and Peninsular ranges, with the Serrano inhabiting the north and the Cahuilla holding the south. Both groups adapted to and inhabited the terrain in a similar manner. Villages located at higher elevations were placed near canyons that received substantial precipitation or were adjacent to streams and springs. Villages situated at lower elevations were also located close to springs or in proximity to the termini of alluvial fans where the high water table provided abundant mesquite and shallow wells could be dug. Although the two groups were independent of one another, village communities often interacted with each other (Altschul 1984; Bean 1978; Bean and Smith 1978; Warren 2004).

Though definitive boundaries outlining group territory are lacking, it is generally understood that the Serrano were bordered to the west by Cajon Pass in the San Bernardino Mountains, to the east by Twenty-nine Palms and to the south by Yucaipa Valley; an area ranging in elevation from 1,500 to 11,000 amsl. The Serrano subsistence strategy relied upon hunting and gathering, and occasionally fishing. The division of labor was split between women gathering and men hunting and fishing (Altschul et al. 1984; Bean and Smith 1978; Warren 2004). Mountain sheep, deer,

rabbits, acorns, grass seeds, piñon nuts, bulbs, yucca roots, cacti fruit, berries, and mesquite were some of the more common resources utilized (Bean and Smith 1978; Warren 2004).

The Serrano were organized into clans, with the clan being the largest autonomous political entity. They lived in small villages where extended families lived in circular, dome-shaped structures made of willow frames covered with tule thatching. The Serrano utilized shell, bone, feathers, wood, stone, and plant fibers in the manufacture of their material culture, including extravagant basketry, blankets, and ceremonial costumes. Despite early European and Spanish contact in 1771 and 1772, respectively, the Serrano remained relatively autonomous until the period between 1819 and 1834 when most of the western Serrano were removed and placed into missions (Bean 1978; Bean and Smith 1978; Warren 2004).

The Cahuilla territory was bordered by the San Bernardino Mountains to the north, Borrego Springs and the Chocolate Mountains to the south, the Colorado Desert to the east and the San Jacinto Plain near Riverside to the west. Given the territory's close proximity to the Cocopa-Maricopa Trail that linked the Colorado Desert with the Pacific Coast, interactions with surrounding tribes, including the Serrano, were extensive. Like the Serrano, the Cahuilla were also organized into clans. The clan consisted of three to ten lineages and was the largest political unit. Each clan spoke a different dialect and the individuals who comprised each lineage participated in communal defense, subsistence, and ritual activities. Individual lineages had rights to land; however, a majority of the clan territory was available to all members. Houses varied in size from simple brush shelters to dome-shaped or rectangular structures that could be up to 20 feet long (Altschul 1984; Bean 1978; Bean and Smith 1978; Warren 2004).

Cahuilla subsistence was virtually identical to that of the Serrano. This is expected in an environment conducive to a diversified economy where successful adaptation need not depend on one resource (Altschul et al. 1984). However, the Cahuilla differ from the Serrano in that they later adopted the agricultural techniques of the Colorado River tribes and raised corn, beans, squash, and melons. The Cahuilla material culture was quite extensive and included pottery, extravagant ceremonial regalia, charmstones, sandals made of mescal fiber, skirts for women made of mesquite bark, skins, and tules, and loincloths for men. Despite early contact with European and Spanish explorers, the Cahuilla culture and population remained relatively intact until 1891, when the federal government took an active roll in supervising the reservations that were established in 1877. That the Cahuilla maintained their autonomy to such a relatively late period was largely a result of neighboring tribes blocking land routes to explorers as early as 1774. In addition, once the settlers did infiltrate Cahuilla territory, they used the land primarily for cattle grazing, a practice that was relatively noninvasive compared to the establishment of missions (Bean 1978; Bean and Smith 1978; Warren 2004).

3.4.2.4 Historical Context

In historic times, the San Bernardino Valley was first visited by Pedro Fages, explorer and Spanish Military Commander of California, in 1772, and by Fr. Francisco Garces, a missionary priest, in 1774. It was not until 1810, however, when Franciscan missionary Francisco Dumatz of the San Gabriel Mission named the valley San Bernardino in observance of the feast day of St.

Bernardine of Siena. The name proliferated and was later given to the nearby mountain range, city and county. In addition to the missions, the Spanish explorers brought with them a myriad of diseases including smallpox, measles, and syphilis, which decimated native populations who had no immunity. Those who survived often found themselves displaced from their land by increasing pressure from Mexican and, later, American settlers. The Mission Period ended sometime around 1834, and gave way to the Mexican or Rancho Period.

The Rancho Period was marked by years of strategic movement to gain control of the various ranchos, used primarily for cattle rearing, throughout the area. In 1842 the Lugo family persevered, and was provided a land grant, the Rancho San Bernardino, from the Mexican government. The Rancho, a total of 37,700 acres encompassing the entire San Bernardino Valley, was granted to raise stock and establish a colony. Shortly thereafter, the valley boasted 4,000 head of cattle and the Lugos were settled throughout the area. The Lugo family, however, faced substantial economic hardship due largely to their inability to adequately protect their livestock and in 1851, they sold the Rancho to a group of Mormon colonists led by Captain Jefferson Hunt of the Mormon Battalion. The end of the Rancho Period in southern California came with the war between Mexico and the United States (1846-1848). In 1846, significant battles near the current project locale were fought at Chino to the west and Aguanga to the south. Despite this, the war had little overall impact on the San Bernardino Valley and the end of local involvement in the war came with the surrender of the Mexican-California forces to the Americans in 1847 at Cahuenga (Altschul 1984; County of San Bernardino, 2006a).

Other early visitors to the area included Jedediah Smith in 1826 and Kit Carson, along with a group of trappers, in 1830. In 1850, California was admitted into the United States and three-years later San Bernardino County was created from parts of Los Angeles, San Diego and Mariposa Counties (Altschul et al. 1984; County of San Bernardino, 2006a). San Bernardino County has a rich agricultural and mining history. Vineyards were planted in the Cucamonga area as early as the 1840s. In 1857 three orange trees were planted on a farm in Old San Bernardino and by 1882 railcar loads of oranges and lemons were being shipped to Denver. Gold was discovered in the San Bernardino Mountains in 1860, within Holcomb and Bear Valleys, drawing an influx of miners to the area. The boom continued with the discovery of Borax in 1862 in Searles Dry Lake and, again, with the mining of silver in the 1870s and 1880s in Ivanpah and Calico. By 1893 the government realized the need for a permanent Indian reservation, at which point the San Manuel Reservation was established.

Extensive water conveyance systems, which are present throughout the valley, are another notable feature of the area. Initially, water diversion projects in the area were small and localized, beginning with the 1820 construction of the Mill Creek Zanja, or canal, during the Mission Period. However, in response to significant population growth in the San Bernardino Valley, major region-wide water systems were developed in the 1890s. Several dams were built and completed in Bear Valley by 1912, which supplied water to large irrigation and domestic water systems that are still in use today. In 1951, the California Legislature authorized the construction of the State Water Project, which is the largest of its kind in the United States. Construction began in 1957 and has been ongoing ever since. The project is an approximately 600-mile-long

water storage and delivery system for the state of California. It originates in northern California at Lake Oroville and its terminus lies in southern California at Lake Perris, southwest of the current project location (Altschul et al. 1984; DWR Office of Water Education 1997).

Grand Central Rocket Company and Lockheed Propulsion – Mentone Facility

The Grand Central Rocket Company which later became Lockheed Propulsion's Mentone Facility was operated between 1954 and 1976. The facility was known for its role in the development of solid rocket fuels used for both military applications and space exploration. The pipeline alternative alignments of the proposed project would be located along existing roadways that intersect or parallel the perimeter of this approximately 600-acre facility. The facility is bounded by Crafton Avenue on the west, Madeira Avenue on the south, Garnet Street on the east, and Mill Creek on the north. A summary of the historical context of this facility is provided below.

Grand Central Rocket Company was founded by Charles E. Bartley and L.R. Settlemire, who left the California Institute of Technology Jet Propulsion Laboratory in the late 1940s. They teamed with C.C. Moseley, an entrepreneur in aviation travel and the owner of the Grand Central Airport in Glendale (Los Angeles Times, April 20, 1947). Grand Central Rocket Company was first established as a subsidiary of Grand Central Aircraft Company (which specialized in the modification of aircraft) in 1952, with the understanding that Grand Central Rocket Company would become independent when it was financially sound (Redlands Daily Facts, August 12, 1954).

The population of post-World War II Glendale was quickly encroaching on the Grand Central Airport, so Grand Central Rocket moved out to Redlands, and the community of Mentone in particular, to take advantage of the remoteness of the land. Construction on the new buildings needed for Grand Central's operations began in January 1954 on approximately 200 acres located at the northeast corner of Crafton Avenue and Madeira. "On a 20-acre plot within the 200 acres, several buildings of modest size will be constructed." (Redlands Daily Facts, December 30, 1953). The company consisted of about 40 employees and they quickly went to work on military projects, one of which was the development of a solid propellant device that could assist heavily laden bombers achieve take-off speed, and was especially needed for the war effort in Korea. Sixteen new buildings were constructed in the 20-acre plot, with the first of the "low one story concrete buildings" erected for a testing unit (Redlands Daily Facts, February 20, 1954).

In October 1957, the Russians launched Sputnik, the first artificial satellite put into space where it could cross the sky above the United States and other democratic countries unimpeded. The "Space Race" had begun. One of the most top secret projects in the U.S. had already been started; the development of an earth satellite "for scientific research". During the late 1950s, the Grand Central Rocket had been working as a sub-contractor to the Martin Company for the Navy's Vanguard project to develop the third stage of a rocket fueled with solid fuel propellants that would put a 22 pound radio satellite into orbit (Moore 1992). Grand Central Rocket was also working on Project Far Side, and the Arrow II rocket developed for the project had set an all-time altitude and speed record in October 1957. The Arrow II rocket was constructed to achieve the speed of 3,600 miles per hour. in one second (U.S. Satellite Replica Being Tested in Area. Los Angeles Times, October 28, 1957).

Lockheed Aircraft Corporation completed its purchase of the Mentone facility in 1963 where they continued to develop propulsion systems. Lockheed closed the operation in Mentone in 1975 (Lockheed Plans to Close Plant. Los Angeles Times, January 17, 1975).

3.4.2.5 Geologic (Paleontological) Context

The proposed project is situated within a mapped lithologic unit deposited in the alluvial wash surface of the Santa Ana River Wash and Mill Creek, east of the city of Redlands. The lithologic unit mapped and observed underlying this property is discussed below. The sedimentary unit is mapped as two rock types that include non-marine, unconsolidated flood plain and active streambed deposits of Holocene Epoch age which are mapped as surface deposits and Quaternary Alluvium (Rogers, 1965; Bortugno and Spittler, 1987; Dibblee, 2004, 2004).

Unconsolidated sedimentary deposits consisting of boulder gravels, coarse cobble gravels, arkosic sands, silts and mud from the Holocene Epoch (less than 10,000-years before present (ybp)) are mapped throughout Riverside and San Bernardino Counties in areas of low relief where recent sediments accumulated as they are shed by upland surfaces thereby filling low depressions. These deposits within the project area are mapped as Quaternary Wash and older wash deposits of the Santa Ana River Wash Alluvium. Coarse gravels and sands are exposed on the surface and underlie much of the ground surface beneath the project extending to depths that appear to exceed 20 feet, a depth based upon visible exposures in a gravel quarry west of the project boundaries. The gray to light brown color of the dominantly arkosic sands and their poor consolidation indicate a young age for these rocks. Age most likely does not exceed 10,000-years at greater than 15 feet in depth. In geologic time, these sediments are incredibly young, and very unlikely to contain fossil resources.

3.4.3 Site Setting

This section describes the surveys that were conducted in the project area to determine to the cultural significant of the area.

3.4.3.1 Survey Methodology

Archaeological Resources

In order to assess the potential for archaeological resources within the APE, DWR prepared the East Branch Extension Phase II Archaeological Survey Report (September 2007). The assessment consists of a records search, literature review, Native American Consultation, and field reconnaissance that evaluates the sensitivity of proposed facility locations for archaeological resources. A record search for the project was conducted on November 13, 2006 at the San Bernardino Archaeological Information Center of the California Historical Resources Information System, at the San Bernardino County Museum. Records of previous cultural resource studies and previously recorded cultural resources were consulted, as were the references: *California Place Names* (Kyle et al. 1998) and *Historic Spots in California* (Bright and Gudde 1990).

Field surveys were conducted using visual pedestrian survey methods at varying survey transect widths to accommodate differences in vegetation, terrain, and the presence of buildings, fences or percolation ponds. Transects of 15 to 20 meters were typically used along the alternative alignments. Alternative Alignments 3 and 4 could not be fully inspected in the field due to restricted access of the proposed routes. Most of Alignment 3 runs along a mile-long flood wall. Survey of Alternative Alignment 3 was restricted to the 50-foot-wide access road directly south of the wall, as access to the remainder of Alternative Alignment 3's APE corridor was restricted by fencing. Survey of Alternative Alignment 4 was carried out only in the 250-foot northeast and southwest sections which overlap the survey corridor of Alignment 1.

Native American Consultation

Consultation took place with the Native American Heritage Commission (NAHC) on November 9, 2006. The NAHC was asked to search their Sacred Lands Inventory File and to notify the DWR of any sacred lands recorded within or in close proximity to the project area. The NAHC was also asked to provide an updated list of Native American contacts for the area. A Native American contact list was provided by the NAHC on November 21, 2006 and on November 30, 2006 the Morongo Band of Mission Indians, the Serrano Band of Indians, and the San Manuel Band of Mission Indians, were notified in writing (**Appendix D**).

Historical Assessment

In order to evaluate buildings and structures within the APE as historic resources, Chambers Group Inc. conducted preliminary investigations while ESA conducted additional historic research and analysis. The results of this investigation are presented in the *Historical Resource Assessment Report* (May 2008). Site inspections and interviews with persons familiar with the area were performed to document existing conditions and assist in assessing and evaluating historical significance for a given property. An intensive pedestrian survey of the property, including photography and background research, was also conducted. Archival resources at the A.K. Smiley Library in Redlands and past articles from the Los Angeles Times were reviewed for information relating to the location of the subject property and its construction information. The National Register of Historic Places (National Register), the California Register of Historical Resources (California Register), and the City of Redlands Historic Landmark or Point of Interest criteria were employed to evaluate the significance of structures within the APE.

Paleontological Survey

In order to assess the potential for paleontological resources to be present at proposed facility locations, Chambers Group Inc. prepared the Phase I Paleontological Resources Inventory Study (June 2007), consisting of a records search, literature review and field reconnaissance to evaluate the sensitivity of the parcel for the presence of fossil resources.

3.4.3.2 Results

This section describes the results of the surveys that were described above.

Archaeological Resources

Record Search Results

The cultural records search found six previous cultural resources studies conducted in or immediately adjacent to the APE and an additional 13 studies conducted within one-half of a mile of the project area. The record search identified 22 previously recorded archaeological sites in or immediately adjacent to the APE. Twelve of the sites are described as domestic debris/trash scatters, six are recorded as canals/water conveyance systems, and four are described as “other” with specific descriptions (**Table 3.4-1**).

**TABLE 3.4-1
DESCRIPTION OF SITES IN OR IMMEDIATELY ADJACENT TO THE APE**

Trinomial	Site Description
CA-SBR-5509-H	Domestic debris/trash scatter
CA-SBR-5981-H	Domestic debris/trash scatter
CA-SBR-5982-H	Domestic debris/trash scatter
CA-SBR-6060-H	Domestic debris/trash scatter
CA-SBR-6061-H	Domestic debris/trash scatter
CA-SBR-6062-H	Domestic debris/trash scatter
CA-SBR-5509-H	Domestic debris/trash scatter
CA-SBR-6063-H	Domestic debris/trash scatter
CA-SBR-6064-H	Domestic debris/trash scatter
CA-SBR-6066-H	Domestic debris/trash scatter
CA-SBR-6067-H	Domestic debris/trash scatter
P36-060194	Domestic debris/trash scatter
CA-SBR-8546-H	Water conveyance: Bear Valley Canal
P1063-49-H*	Water conveyance:
P1064-21-H	Water conveyance: Mentone Irrigation Company Pipeline
PSBR-21-H	Water conveyance: Sunnyside/South Fork Ditch
PSBR-22-H	Water conveyance: Judson-Brown Ditch/Redlands Canal
PSBR-28-H*	Water conveyance:
CA-SBR-6847-H*	Other: Rail Road/Old Kite Route
CA-SBR-10681-H	Other: Series of formed and poured cement foundation slabs and two formed and poured cement and rock cobble structure remnants
P36-020251	Other: Mill Creek Bridge
P1064-20-H	Other: Hugh Brothers house site(s) and orange groves

NOTE: * - site record absent

SOURCE: DWR, September 2007.

Eighteen additional archaeological sites were identified within one-half mile of the project corridor. Three of the sites are recorded as domestic debris/trash scatters, eight are described as canals/water conveyance systems, and seven are described as “other”.

Archaeological Field Survey Results

A total of 34 historic era archaeological resources were recorded, including 21 water conveyance features (eight concrete channels/diversion structures; one isolated concrete pipe; one isolated ceramic pipe; and 12 isolated metal pipe segments), 10 debris/trash scatters, one site containing both a water conveyance feature and a debris/trash scatter, and one site that consisted of an “L”-shaped pile of cobblestone wrapped in wire fencing, and one previously recorded historic site, the Redlands Canal (CA-SBR-22H).

Sites were recorded on a Department of Parks and Recreation form 523A. The field survey confirmed that a significant portion of the APE has been heavily disturbed as a result of hydrologic forces and the nearby commercial industry and residential housing. A summary of resources located within the APE is provided in **Table 3.4-2**.

It is expected that Alternative Alignments 3 and 4 would have similar sites as those recorded within the areas of the APE that were accessible at the time of survey. The sites have yet to be evaluated according to the criteria described above.

Native American Consultation Results

The record search provided by the NAHC on November 21, 2006 failed to indicate the presence of any known sacred Native American sites. The individuals and organizations identified by the NAHC were contacted by letter on November 09, 2006 to solicit their comments and concerns regarding the project. A response was received via electronic correspondence from Britt Wilson of the Morongo Band of Mission Indians on December 13, 2006. Mr. Wilson confirmed that there were no cultural resources or villages within the project area. However, he noted the close proximity of two village sites: one to the south at the Crafton and Colton Avenues intersection and one further west and north of the Santa Ana Wash. To date, no response has been received from any other Native American individuals/organizations.

Historical Survey Results

Currently used as an industrial park and no longer used as a rocket manufacturing facility, nineteen industrial buildings/structures that were once part of the Lockheed Propulsion Mentone Facility were recorded within the APE corridor. The buildings are discussed in the site specific Historic Resources Assessment completed by ESA (2008). **Figure 3.4-1** provides views of typical structures on the property. Dates of construction, current use, integrity and condition are included in the individual site forms included in the ESA (2008) report. A brief summary of the buildings within the APE is presented below.

- Building 7W1: Administration building. A large, one-story, flat-roofed, rectangular building that appears to be constructed of poured concrete or concrete block floors and walls. The exterior walls are covered with a stone aggregate for decoration, and small,

**TABLE 3.4-2
RESOURCES ENCOUNTERED THROUGHOUT THE APE**

Site Designation	Site Description	GPS Point(s)	Date Recorded
A1-1	Water conveyance: concrete pipe	1, 2	03/05/07
A1-3	Water conveyance: ceramic pipe	3, 4, 5	3, 4, 5
A1-6	Water conveyance: isolated metal pipe segment	6	03/05/07
A1-7	Water conveyance: concrete channel	7	03/05/07
A1-8	Water conveyance: four isolated metal pipe segments	8	03/05/07
A1-9	Water conveyance: concrete channel	9	03/05/07
A1-10	Water conveyance: isolated metal pipe segment	10	03/05/07
A1-11a	Domestic debris: can scatter	11a	03/05/07
A1-12	Water conveyance: isolated metal pipe segment	12	03/05/07
A1-14	Water conveyance: discontinuous segment of metal pipe	14	03/05/07
A1-15	Water conveyance: isolated metal pipe segment	15*	03/05/07
A1-16	Domestic debris: modern trash dump	16	03/05/07
A1-18	Water conveyance: isolated metal pipe segment	18	03/05/07
A1-19	Domestic debris: can scatter	19	03/05/07
A1-20	Water conveyance, domestic debris: isolated metal pipe segment and modern trash	20	03/05/07
A1-21	Water conveyance: isolated metal pipe segment	21	03/05/07
A1-22	Water conveyance: cobblestone and concrete wall with metal pipe	22	03/05/07
A1-23	Water conveyance: two metal pipe segments	23	03/05/07
A1-25	Water conveyance: isolated metal pipe segment	25	03/05/07
A1-26	Water conveyance: brick and concrete structure	26	03/05/07
A1-28	Water conveyance: concrete channel	28	03/05/07
A1-32	Domestic debris: modern can scatter	32	03/06/07
A1-34	Water conveyance: concrete and cobblestone structure	34	03/06/07
PSBR-22-H	Water conveyance: Redlands Canal	*	03/06/07
A1-42	Domestic debris (Locus A,B, and C): can scatter	43,44,42	03/07/07
Debris Scatter	Domestic debris: modern trash dump	*	11/14/06
A2-29	Water conveyance: three isolated metal pipe segments	29	03/05/07
A2-30	Water conveyance: isolated metal pipe segment	30	03/05/07
A2-31	Domestic debris: modern trash dump	31	03/05/07
A2-36	Other: cobblestone wrapper in wire fencing	36	03/07/07
A2-37	Water conveyance: three cobblestone and concrete structures	37	03/07/07
A2-38	Domestic debris: can scatter	38	03/07/07
A2-39	Domestic debris: can scatter	39	03/07/07
A2-45	Domestic debris: can scatter	45	03/07/07

NOTE: * – missing GPS data



Photo 1: Abandoned Building.



Photo 2: Remnants of a foundation in the foreground and buildings in the background.

narrow windows pierce the façade. The entrance is on the north elevation, and consists of a simple rectangular concrete canopy and side walls sheltering a set of entrance doors.

- Building 118: Engineering and design offices, and laboratory. A large, one-story, flat-roofed, rectangular building that appears to be constructed of poured concrete or concrete block floors and walls. A simple canopy extending from the building, supported by metal beams, faced with corrugated metal panels, surrounds the building.
- Building 115: Quality Assurance/Quality Control (QA/QC) offices and laboratory; laboratory for mixing propellants, and chemical analysis laboratories. A moderately sized, one-story, flat roofed, rectangular building that appears to be constructed of poured concrete or concrete block floors and walls. The exterior walls facing San Bernardino Avenue (north elevation) have been faced on the bottom 2/3 of the wall with large, flat irregularly shaped, sandstone rocks. A large, dirt berm encircles the west, south, and east sides of the building to protect surrounding buildings from any explosions that may have occurred.
- Building 114: Research and development offices and laboratories, and chemistry laboratories. A large, one-story, flat-roofed, rectangular building that appears to be constructed of poured concrete or concrete block floors and walls. The majority of the building exterior is faced with brick and has a wide protruding frieze on all the elevations. The front of the building has decorative concrete block screening, with solid blocks and pierced blocks. On the front elevation large, flat irregularly shaped, sandstone rocks face the exterior walls. On the other elevations, there are specialty doors. A large berm constructed of wood and concrete, with many window-like openings, runs along the east side of the building.
- Building 111: Use unknown. A small rectangular, one-story building with a flat roof. On the front elevation the exterior walls are faced with large, flat irregularly shaped sandstone rocks. The front of the building is slightly lower in height than the main block of the building. A wide frieze protruding from the façade forms a canopy over the large, aluminum framed, ribbon windows.
- Old Southern Pacific Railroad spur line/facility road: this maintenance road starts where the guard booth is currently located on Madeira Avenue and runs to the northeast, crossing San Bernardino Avenue, towards Mill Creek. The road is the original location of the Southern Pacific Railroad spur line that ran to the Golden Buckle packing house on Greenspot Road. The tracks had been abandoned before Grand Central Rocket Company took possession of the property.
- Building 61: Non-explosive chemical storage.
- Bunker 1: A long, above-ground bunker that runs parallel to the road, with a concrete entrance, and covered with dirt.
- 34-60 Mixing Building: building where specially constructed mixers made the solid fuel propellant. Mixing machines included large kettles with special paddles for mixing the materials. Kettles were moved on an overhead crane supported by large steel I beams.

- Building 131: Ammonium Perchlorate grinding building. Materials would be ground into the size required for a specific burn rate.
- Test bunkers and structures, concrete pads of removed structures.
- Above ground, covered bunkers on north side of avenue.
- Administration Building/Wing A, B, C, D, and E: This is the original administration building of Grand Central Rocket Company.
- Building 132: Use unknown.

The property is not currently listed on either the National Register or the California Register, nor is it a designated City of Redlands Historic Landmark or Point of Interest. To determine the historical significance of the Lockheed Propulsion Mentone Facility and the individual buildings and structures, federal, state, and local criteria have been applied. Because the former facility is less than fifty-years old (with some buildings just over fifty-years), the site must be determined *exceptionally* significant, and stringent criteria applied for it to be considered an historic resource under federal, state, and local criteria. A formal determination of eligibility will need to be conducted that will include review of the preliminary assessment conducted by ESA (2008) and consultation between the DWR and the SHPO. ESA (2008) has recommended the area does not qualify as an historic district on any level based on application of these criteria.

Paleontological Survey Results

The Phase I study and survey (2007) did not encounter fossil resources. It was determined that deposits within and around the APE are considered to have a low potential to contain significant fossil resources and the area is considered to possess a very low paleontological sensitivity.

3.4.4 Impact Assessment

The proposed project's potential impacts were assessed using the *CEQA Guidelines* in Appendix G. The sections discuss the key issue areas identified in the *CEQA Guidelines* with respect to the project's potential effect to Cultural Resources. Significance thresholds are identified and a significance conclusion is made following the discussion.

3.4.4.1 Archaeological Resources

This section discusses the following CEQA Checklist question:

Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Significance Threshold

A project would have a significant adverse affect on archaeological resources if the project would cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Section § 15064.5

Impact Analysis

Archaeological Resources

Thirty four (34) historic archaeological sites may be impacted by the proposed project. In addition, there is the likelihood that additional sites exist along Alternative Alignments 3 and 4 where survey access was restricted. Ground-disturbing construction activities would have the potential to directly impact cultural or archaeological resources within the APE by disturbing both surface and subsurface soils. These resources could be prehistoric or historic. The inadvertent destruction of potentially significant cultural resources by construction operations would be a significant impact. Because none of the archaeological resources identified have been evaluated for the National Register of Historic Places (NRHP) pursuant to 36 CFR 800 and 36 CFR 60, or the California Register of Historical Resources (CRHR) under California Public Resources Code 5024, they will be treated as significant resources until they are formally evaluated. The following mitigation measures would be required to reduce impacts to a less-than-significant level.

Mitigation Measures

CR-1: Once an alternative alignment has been selected, known archaeological sites along that alternative alignment will be evaluated further by a qualified archaeologist to determine their potential significance. The qualified archaeologist shall prepare a report evaluating each known archaeological site and noting whether the site could be significant. The report will determine whether additional evaluation would be required prior to the destruction of each site. DWR shall consult with the SHPO to determine the eligibility of resources as historic properties, and the effect of the proposed project on identified historic properties. DWR shall implement additional data recovery if requested by SHPO.

CR-2: DWR shall narrow the construction zone to avoid known archaeological resources where feasible. If appropriate, prior to construction, a qualified archaeologist shall mark exclusion zones around known archaeological sites that can be avoided to ensure they are not impacted by construction.

CR-3: In the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and DWR shall consult with a qualified archaeologist to assess the significance of the find. If any find is determined to be significant, representatives of DWR and the qualified archaeologist would meet to determine the appropriate course of action. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measures CR-1, CR-2, and CR-3 would reduce impacts to archaeological resources by requiring a site survey and report, by narrowing the construction zone to avoid any known archaeological resources, and by requiring a qualified archaeologist to assess the significance of any cultural findings.

3.4.4.2 Historic Resources

This section discusses the following CEQA Checklist question:

Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

Significance Threshold

A project would have a significant adverse impact on an historical resource if the project would cause a change in the significance of a historical resource that is either listed or eligible for listing in the National Register of Historic Places, the California Register of Historical Resources, or a local register of historic resources in accordance with *CEQA Guidelines*, §15064.5.

CEQA Guidelines Section 15064.5 defines a “substantial adverse change in the significance of an historical resource” to mean “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be *materially impaired*.” (*CEQA Guidelines*, §15064.5, subd. (b)(1) (emphasis added)).

CEQA Guidelines, §15064.5, subdivision (b)(2), defines “materially impaired” for purposes of the definition of “substantial adverse change ...” as follows:

“The significance of an historical resource is materially impaired when a project:

- A. demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or
- B. demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- C. demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.”

Historical Resources Impacts

As previously discussed, the Grand Central Rocket/Lockheed Propulsion Company facility is not currently listed on either the National Register or the California Register, nor is it a designated City of Redlands Historic Landmark or Point of Interest. However, the entire site, buildings and structures, have not yet been formally evaluated through consultation with the SHPO and are therefore unevaluated resources. The site is not recommended as significant based on application of appropriate historic contexts, and significance criteria. Because the site is fifty-years or only slightly older, it must meet tougher criteria that would qualify it as *exceptionally* significant. If the facility is formally determined to be significant by SHPO, any changes to the buildings and structures located on this property, including alteration, modification, or demolition, could be considered a significant impact.

The proposed project would not demolish, alter, modify or disturb any existing structure. As defined above, there are three basic ways to “materially impair” a building or district and therefore affect attributes which make the building or district historically significant. The project would not materially impair any of the structures in or near the APE, and would therefore not affect any physical characteristics of the buildings that may contribute to their significance if they are determined to be significant. Because the structures would be avoided, impacts are not expected. Because the pipelines would be buried, impacts regarding the integrity of setting would only be temporary. Nonetheless, Mitigation Measure CR-4 would reduce the impact to a less-than-significant level.

Mitigation Measures

CR-4: DWR shall avoid impacting existing buildings within the former Lockheed Propulsion Company property.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measure CR-4 would reduce impacts by requiring that impacts to buildings within the former Lockheed Propulsion Company property be avoided.

3.4.4.3 Native American and Buried Cultural Resources

This section discusses the following CEQA Checklist question:

Would the project disturb any human remains, including those interred outside of formal cemeteries?

Significance Threshold

A significant impact would result if buried human remains are uncovered during construction.

Impact Analysis

The accidental discovery of burials falls under Health and Safety Code 7050.5. More specifically, remains suspected to be Native American are treated under CEQA at §15064.5 and guidance found at Public Resources Code §5097.98 (amended in 2006 by AB 2641) that describes the process to be followed in the event that remains are discovered. No Native American Resources were identified following appropriate consultation with the NAHC and identified tribes. While no impacts are expected, in the event of the unexpected discovery of human remains, the following mitigation measure would be required.

Mitigation Measures

CR-5: If human remains are discovered during construction activities, no further disturbance to the site shall occur until the County Coroner is notified. If the coroner determines the remains to be Native American, the coroner shall notify the Native American Heritage Commission within 24 hours. The Native American Heritage Commission shall identify the person or persons it believes to be the Most Likely Descended of the deceased. Under the amended 5097.98, the Most Likely Descended is required to make recommendations for treatment of any remains. Department of Water Resources shall cease construction activities at the discovery site until the remains have been removed and the site cleared by Native American Heritage Commission and the County Coroner.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measure CR-5 would reduce the impact by requiring that the County Coroner be notified if human remains are discovered during construction activities.

3.4.4.4 Paleontological Resources

This section discusses the following CEQA Checklist question:

Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Significance Threshold

A project would have a significant adverse impact on a paleontological resource if the project would disturbance or destroy a unique paleontological resource or site or unique geologic feature as described in *CEQA Guidelines*, Section §15064.5.

Impact Analysis

Based on the Phase I paleontological survey that concluded that the site has a very low to no paleontological sensitivity and fossil deposits have low potential of occurrence, the discovery of unidentified fossils are not likely to occur. However, there is still a change of encountering

unidentified resources during excavation activities. Thus, the following mitigation measure is required.

Mitigation Measures

CR-6: In the event of an accidental discovery of fossil resources, work in the immediate vicinity of the find shall cease until a qualified paleontologist has determined the appropriate treatment of the find in accordance with Society of Vertebrate Paleontology Guidelines.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measure CR-6 would reduce impacts by requiring consultation with a qualified paleontologist if fossil resources are discovered during construction.

3.4.4.5 Mitigation Measure Summary Table

Table 3.4-3 presents the impacts and mitigation summary for Cultural Resources.

**TABLE 3.4-3
IMPACTS AND MITIGATION SUMMARY**

Proposed Project Impact	Mitigation Measure	Significance after Mitigation
Archeological Resources: Construction of proposed facilities would have a less-than-significant impact on known or unknown cultural resources with mitigation.	CR-1, CR-2, CR-3	Less than significant
Historical Resources: Construction of proposed facilities would have a less-than-significant impact on historical resources with mitigation.	CR-4	Less than significant
Native American Resources: Construction of proposed facilities would have a less-than-significant impact on unknown buried cultural resources with mitigation.	CR-5	Less than significant
Paleontological Resources: Construction of proposed facilities would have a less-than-significant impact on paleontological resources with mitigation.	CR-6	Less than significant

Intentionally left blank.

3.5 Geology, Soils, Seismicity and Mineral Resources

This section describes the geologic conditions within the project area and evaluates whether those conditions would result in geologic or seismic hazards to the proposed project. The section also evaluates whether the proposed project would cause geologic hazards, increase seismic risk, or adversely affect a mineral resource.

3.5.1 Regulatory Framework

3.5.1.1 State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act) signed into law in December of 1972, requires the delineation of zones along active faults in California. The purpose of the Alquist-Priolo Act is to regulate development on or near active fault traces to reduce the hazard of fault rupture and to prohibit the location of most structures for human occupancy across these traces. Cities and counties must regulate certain development projects within the zones, which includes withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement (Hart and Bryant, 1997). Surface fault rupture is not necessarily restricted within an Alquist-Priolo Zone. However, the proposed and existing project sites are not located within an Alquist-Priolo fault zone and therefore, this Act is not applicable to this project.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act, enacted in 1997, was developed to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation must be conducted and appropriate mitigation measures incorporated into the project's design. The California Geologic Survey (CGS) has not completed mapping for this area; therefore, this Act is discussed for informational purposes and is not applicable to this project. However, this report will include a discussion of probabilistic seismic hazards, including the potential impacts of ground shaking, liquefaction, landslides, or other ground failure.

California Building Code

The California Building Code (CBC) is another name for the body of regulations known as the California Code of Regulations, Title 24, Part 2. Title 24 is assigned to the California Building Standards Commission which, by law, is responsible for administering, adopting, approving, publishing, and implementing all building standards in California.

Published by the International Code Council, the International Building Code (IBC) is a widely adopted national model building code in the United States. The 2007 CBC incorporates the 2006 IBC by reference and includes necessary California amendments. These amendments include criteria for seismic design, and approximately one-third of the CBC has been tailored to California earthquake conditions. The CBC provides engineering design criteria for grading, foundations, retaining walls, and structures within zones of seismic activity. Under the CBC, facilities are assigned seismic design categories (A through F) which are based on spectral response accelerations, soil classifications and properties, and occupancy categories. The higher the seismic design category, the more stringent the design criteria are required.

3.5.1.2 Local

San Bernardino County General Plan

The Safety Element of the San Bernardino County General Plan (URS, 2007a) describes the natural and man-made hazards of the county. The San Bernardino County General Plan identifies goals to minimize geologic hazards through technical studies and the implementation of seismic building standards.

The County Department of Environmental Health Services regulates the construction of septic systems and requires plan submittal and approval prior to permit issuance for septic system construction. The Citrus Pump Station's septic system will be subject to standard septic system construction techniques.

City of Highlands General Plan

The Public Health and Safety Element of the City of Highlands General Plan (City of Highlands, 2006) govern the natural and man-made hazards within the city boundaries. The City of Highlands General Plan identifies goals that require development to mitigate geologic hazards by complying with standard building codes that take seismic risk and public safety into account.

City of Redlands General Plan

The Health and Safety Element of the City of Redlands General Plan (City of Redlands, 1997) govern the natural and man-made hazards within the boundaries of the City of Redlands. The General Plan identifies goals that require development comply with building codes that take seismic hazards and public safety into account. The city requires that new development conduct geotechnical assessments prior development and conduct soil erosion mitigation during construction.

3.5.2 Geologic and Seismic Setting

3.5.2.1 Regional Geology

The proposed project area lies within the geologically complex region of the northeastern Los Angeles Basin, at the convergence of the Transverse Ranges Province¹ and the northern part of the Peninsular Ranges Province. The project area abuts the southern flanks of the San Bernardino Mountains, on the floodplain, and within the flood channel, of the Santa Ana Wash and Mill Creek Wash; these washes slope gradually to the west at elevations ranging from about 1,500 feet to 2,400 feet amsl. Young alluvial and fluvial deposits composed primarily of granitic and metagranitic boulders, cobbles, gravel and sand mixtures, including minor amounts of sedimentary rock detritus underlie the project area. These alluvial materials are derived predominantly from the San Bernardino Mountains and minor amounts from the Crafton Hills, located southeast of the project area. Permeability testing conducted to support the proposed Citrus Reservoir design, indicates that the coarse-grained soils that predominate throughout the project area are moderately to highly permeable (DWR, 2006).

3.5.2.2 Regional Geologic Faults

The proposed project is located in a region of high seismic activity. The San Andreas Fault System (SAFS), forming the boundary between the North American and Pacific crustal plates, is expressed as a series of northwest-trending faults (Jennings, 1994). The SAFS consists of the Mill Creek, Wilson Creek, San Bernardino and Mission Creek strands. Other nearby faults include the San Jacinto fault, Banning fault, Crafton Hills fault, Greenspot fault, Arrowhead fault and the San Gorgonio Fault Zone. Many individual faults within the SAFS have produced strong earthquakes in the past and are expected to do so in the future. The San Jacinto fault, which historically is the most seismically active fault in the immediate area, branches from the San Andreas Fault in the San Gabriel Mountains. The active² San Andreas Fault Zone traverses in a northwest direction along the southern flanks of the San Bernardino Mountains and passes within about 1,600 feet of the project area. The San Andreas Fault is a strike slip fault; this means that the relative motion is parallel to the direction of the fault and during an earthquake; the ground on either side of the fault would be displaced laterally.

The Working Group on California Earthquake Probabilities predicts that southern California should experience a magnitude 7.0 or greater earthquake about seven times each century. About half of these will be on the SAFS (the San Andreas, San Jacinto, Imperial, and Elsinore Faults) and half will be on other faults. The equivalent probability in the next 30 years is 85%. The location and other information, including historic activity and maximum expected moment magnitude (Mw),

¹ A geomorphic province is an area that possesses similar bedrock, geologic structure, history, and age. California has 11 geomorphic provinces (CGS, 2002).

² An “active” fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 10,000 years). A “potentially active” fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. (Hart, 1997).

of regionally significant active faults in the project area, are provided in **Table 3.5-1**.³ **Figure 3.5-1** identifies faults in the region.

**TABLE 3.5-1
ACTIVE & POTENTIALLY ACTIVE FAULTS IN THE PROJECT SITE VICINITY**

Fault	Location and Direction	History of Recent Movement	Fault Classification^a	Historical Seismicity^b	Maximum Moment Magnitude^c
San Andreas	1,600 feet northeast of northern-most segment of pipeline. 3,600 feet northeast of Crafton Hills Pump Station	Historic (1812, 1857 ruptures) Holocene	Active	M7.3 1812 M7.9 1857	8.3
San Andreas (South Branch segment)	Approximately 1.78 miles north	Historic (1812, 1857 ruptures) Holocene	Active	M7.3 1812 M7.9 1857	8.3
Crafton Hills fault zone	Approximately 1.8 miles southeast	Historic (2005)	Active	M4.5 (2005)	No Data
Crafton Hills fault zone (Reservoir Canyon segment)	Trends northeast through eastern portion of project area	Late Quaternary (within the last 700,000 years)	Potentially Active	No Data	No Data
San Jacinto	7.2 miles southwest	Historic (1899, 1968)	Active	M6.7 1899 M6.5 1968	8.5

^a An "Active Fault" is defined by the State Mining and Geology Board as one which has displayed surface displacement within Holocene time (about the last 10,000 years).

^b Richter magnitude (M) and year for recent and/or large events.

^c Maximum magnetic magnitude (Mw) is related to the physical size of a fault rupture and movement across a fault. Mw provides a physically meaningful measure of the size of a faulting event [(CGS, 1997b) (CGS, 1997b)]. The Maximum Moment Magnitude Earthquake, derived from the joint CDMG/USGS Probabilistic Seismic Hazard Assessment for the State of California, 1996. (Peterson, et al., 1996).

SOURCES: Jennings, 1994; Hart, 1997, CGS, 1996, City of Highland, 2006

3.5.2.3 Geologic and Seismic Hazards

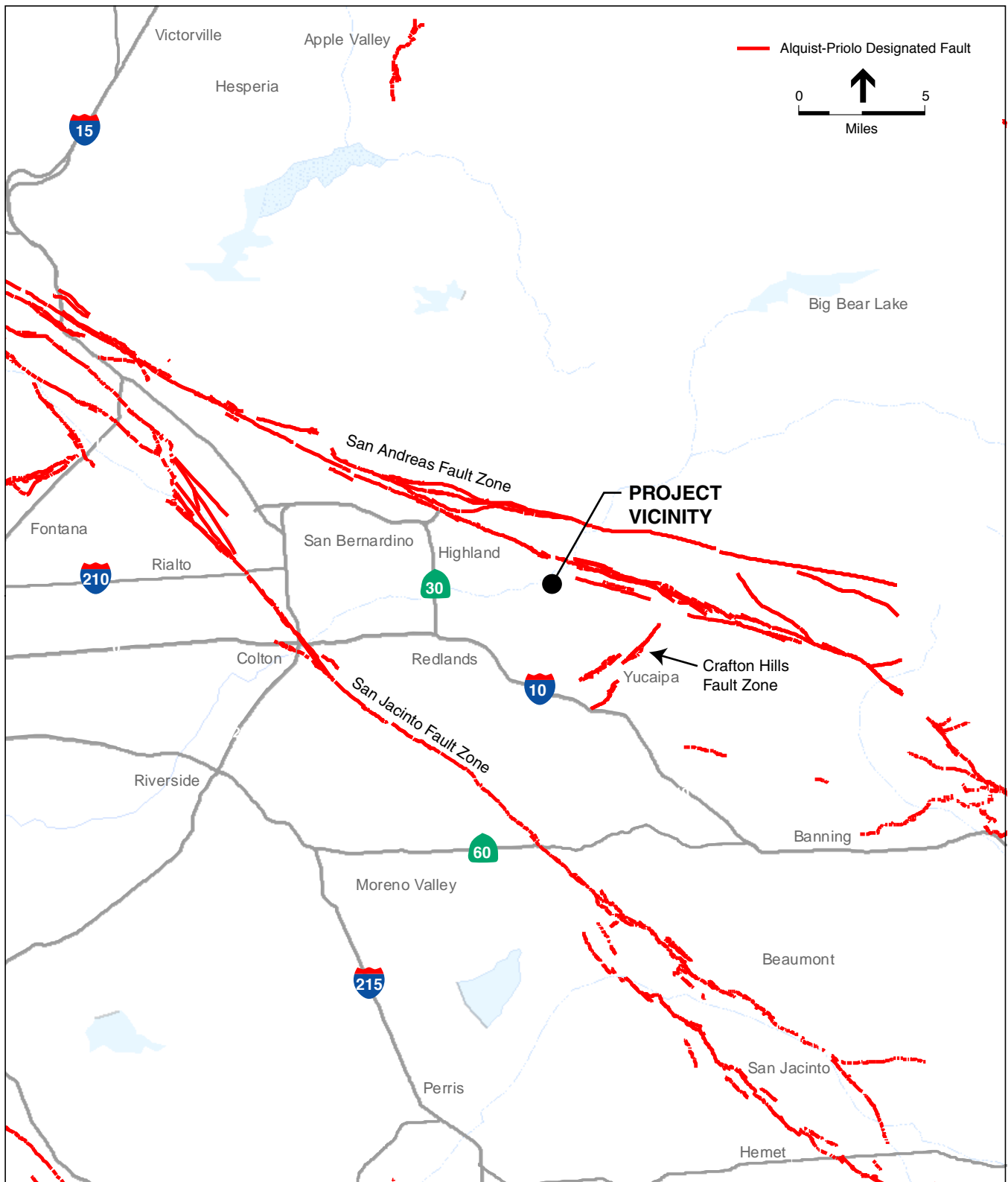
This section summarizes the geologic and seismic hazards which may be present in the proposed project area based on the current understanding of the geology and seismic conditions.

Figure 3.5-1 identifies known faults in the region.

Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid rearrangement, compaction, and settling of subsurface materials (particularly loose, non-compacted, and variable sandy sediments). Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill or poorly graded gravels. Much of the material

³ The *maximum* Mw is the largest earthquake that appears capable of occurring on a fault, based on empirical relationships between fault length, fault rupture length, and historic earthquake magnitudes.



SOURCE:ESRI (2006), CGS (2003)

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Figure 3.5-1
Regional Geologic Hazards

within the historic floodplain has been deposited relatively recently and may be unconsolidated; therefore, some areas within the river wash and on the bluff supporting the citrus orchard could exhibit poorly sorted soils at varying depths.

Liquefaction

Soil liquefaction is a phenomenon primarily associated with saturated, cohesionless soil layers located close to the ground surface. During liquefaction, soils lose strength and ground failure may occur. Secondary ground failures associated with liquefaction include lateral spreading or flowing of stream banks or fills, sand boils, and subsidence. Soils that are most susceptible to liquefaction are clean, loose, uniformly graded, saturated, fine-grained sand that occur close to the ground surface, usually at depths of less than 50 feet. Some liquefiable soils may be encountered within the river bed and adjacent to the percolation basins that provide continuous saturation of subsurface soils during wet periods.

Slope Failure Hazards

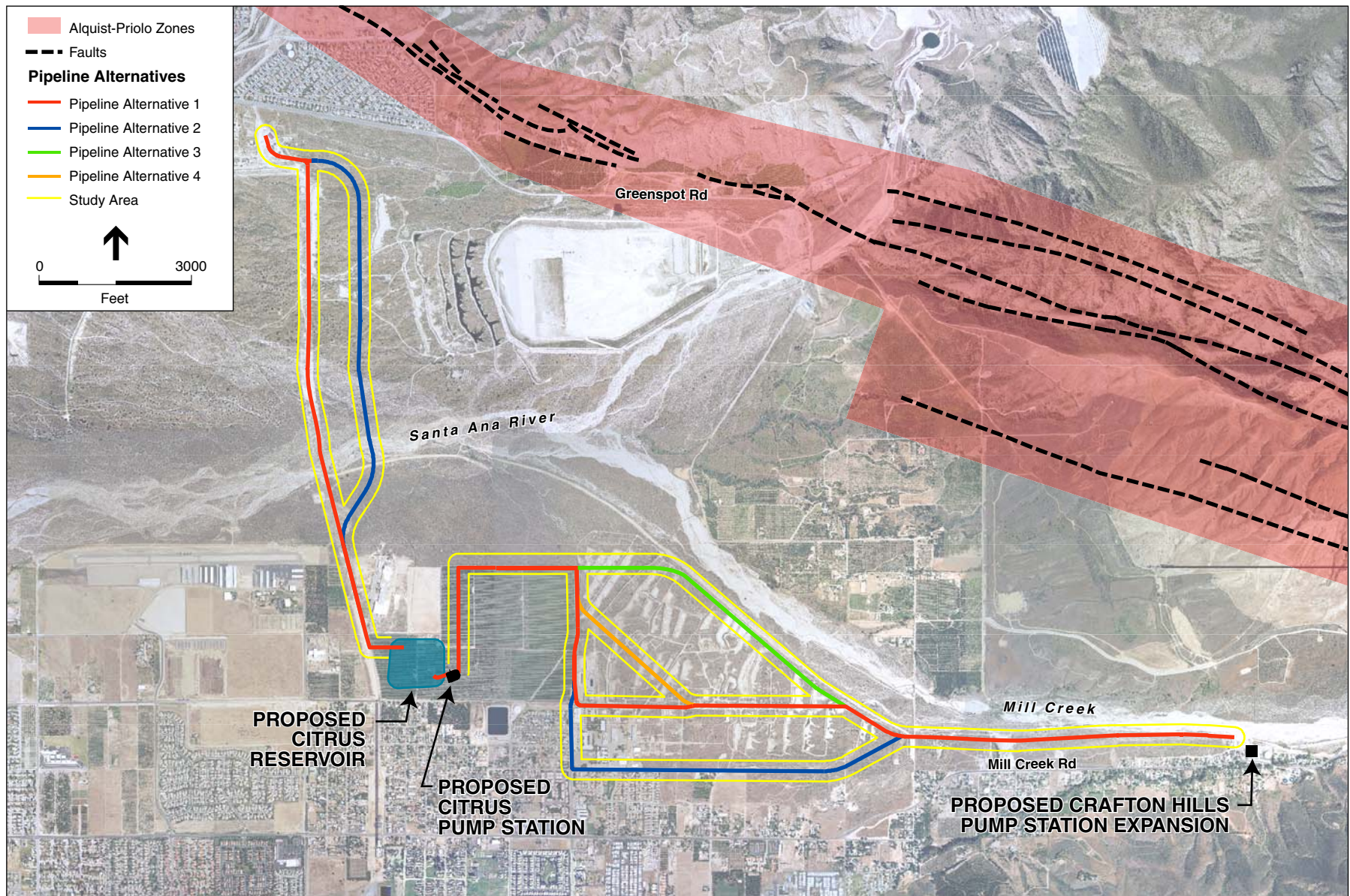
Ground failure is dependent on the slope and geology as well as the amount of rainfall, excavation, or seismic activities. A slope failure is a mass of rock, soil, and debris displaced down a slope by sliding, flowing, or falling. Steep slopes and downslope creep of surface materials characterize landslide-susceptible areas. Although the area is adjacent to the San Bernardino Mountains, surface elevations surrounding and including the project site are relatively level.

Surface Fault Rupture

Seismically-induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The degree of fault rupture can vary for different faults or along different strands of the same fault. Surface rupture can damage or collapse buildings, cause severe damage to roads and pavement structures, and cause failure of aboveground and underground utilities. In large earthquakes, fault rupture is responsible for service disruption of utility service that could be for an unpredictable length of time. **Figure 3.5-2** identifies the Alquist Priolo Zones near the project site in which surface rupture could occur.

Seismic Ground Shaking

Ground shaking intensity would vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic materials underlying an area. The Modified Mercalli Intensity (MMI) scale (**Table 3.5-2**) is commonly used to express earthquake effects due to ground shaking because it expresses ground shaking relative to actual physical effects observed by people during a seismic event. MMI values range from I (earthquake not felt) through a scale of increasing intensities to XII (damage nearly total). Earthquakes on the various active and potentially active fault systems near the proposed project site area can produce a wide range of ground shaking intensities. Geologists and engineers attempt to predict earthquake ground acceleration at sites to improve the structural design of buildings so that the building can withstand the earthquake motion and not collapse.



SOURCE: GlobeXplorer, 2007; ESA 2008.

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Figure 3.5-2
Alquist-Priolo Zones

**TABLE 3.5-2
MODIFIED MERCALLI INTENSITY SCALE (ABRIDGED)**

Intensity Value	Intensity Description	Average Peak Acceleration(g)^a
I	Not felt except by very few persons under especially favorable circumstances.	< 0.0017 g
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	< 0.014 g
III	Felt quite noticeably indoors; especially on upper floors of buildings, but many people do not recognize it as an earthquake.	< 0.014 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound.	0.014–0.039 g
V	Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned.	0.039–0.092 g
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; minor fallen plaster or damaged chimneys. Damage slight.	0.092–0.18 g
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken.	0.18–0.34 g
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, and walls.	0.34–0.65 g
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse.	0.65–1.24 g
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 1.24 g
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

^a g is gravity = 980 centimeters per second squared. Acceleration is scaled against acceleration due to gravity or the acceleration with which a ball falls if released at rest in a vacuum (1.0 g). Acceleration of 1.0 g is equivalent to a car traveling 100 meters (328 feet) from rest in 4.5 seconds.

SOURCE: Bolt (1988)

A probabilistic seismic hazard assessment describes seismic hazard from earthquakes that geologists and seismologists agree could occur.⁴ The analysis takes into consideration the uncertainties in the size and location of earthquakes and the resulting ground motions that can affect a particular site. The CGS Probabilistic Seismic Hazard Assessment for California determined that a ground acceleration 0.75 g has a 10 percent probability of being exceeded in 50 years (1 in 475 chance of occurring annually) (CGS, 2003).

Soil-Related Hazards

The State of California Department of Water Resources, Division of Engineering conducted a geologic study of the proposed Citrus Reservoir and pipeline location and prepared the California Aqueduct East Branch Extension-Phase II Citrus Reservoir Pre-Feasibility Geologic Report (April, 2006). Soil sampled from onsite bores were characterized as Poorly Graded Sands (SP), Poorly Graded Sands with Gravel (SP)g, Gravelly Sands g(SP), and Poorly Graded Gravel (GP) with varying amounts of sand. Additionally, the approximate distribution of cobbles and boulders a minimum of 5 feet in diameter was reported as 20% by volume. Soil characterized as ‘expansive’ readily expand when wet and contract when dried. The resultant change in soil volume defines the “shrink-swell” property of expansive soil. Structural damage may occur overtime due to the placement of structures directly on expansive soils.

3.5.2.4 Groundwater

The project area overlies the Bunker Hill Groundwater Basin, which is in the upper reaches of the Santa Ana River watershed. Groundwater levels in the project area have varied widely over the years due to regional groundwater extraction. Groundwater depth measurements in November 1983 indicated that the water table ranged between 55 feet and 93 feet below ground surface (bgs). The groundwater table underlying the project area has risen consistently over the past 70 years due to improved management and, more recently, the importation of water through the East Branch of the California Aqueduct, which has offset some of the demand for groundwater. The depths to groundwater were greater than 200 feet (bgs) in 1945 and 1936. The groundwater table still rises and falls seasonally, however, the magnitude of those fluctuations are not as extreme as they were in the past (DWR, 2006). A groundwater production well within the citrus orchard had a depth to groundwater of about 180 feet in 2007 (Tetra Tech, 2007).

⁴ Probabilistic expressed in terms of probability of exceeding a certain ground motion. For example, the 10 percent probability of exceedance in 50 years maps depicts an annual probability of 1 in 475 of being exceeded each year. This level of ground shaking has been used for designing buildings in high seismic areas. The maps for 10 percent probability of exceedance in 50 years show ground motions that geologists and seismologists do not think would be exceeded in the next 50 years. In fact, there is a 90 percent chance that these ground motions would not be exceeded. This probability level allows engineers to design buildings for larger ground motions that geologists and seismologists think would occur during a 50-year interval, which makes buildings safer than if there were only designed for the ground motions that are expected to occur in the next 50 years. Seismic shaking maps are prepared using consensus information on historical earthquakes and faults. These levels of ground shaking are used primarily for formulating building codes and for designing buildings. The maps can also be used for estimating potential economic losses and preparing for emergency response (Peterson et al., 1999).

3.5.2.5 Mineral Resources

The alluvial surface geology in the project area includes aggregates that could be mined and processed for various construction activities. The alluvial deposits include river sand, gravels, cobbles, and boulders. The closest active aggregate mine to the project area is located off of Orange Street on the north side of the Santa Ana River wash. Excess excavated materials from the proposed reservoir and pump station construction may be trucked to nearby mining operations for processing.

There are 92 existing mines in San Bernardino County, and the California Department of Conservation is currently developing maps to identify known mineral resources for the County (San Bernardino County, 2006).

3.5.3 Impact Assessment

The proposed project's potential impacts were assessed using the *CEQA Guidelines* Appendix G Checklist. The following sections discuss the key issue areas identified in the *CEQA Guidelines* with respect to the project's potential geologic hazard impacts. Significance thresholds are identified and a significance conclusion is made following the discussion.

3.5.3.1 Surface Rupture

This section discusses the following CEQA Checklist question:

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (with reference to the Division of Mines and Geology Special Publication 42)?

Significance Threshold

The proposed project would result in a significant impact if it were to expose people or buildings to loss, injury, or death resulting from improvements located within an Alquist-Priolo Earthquake Fault Zoning Map; without taking the necessary design/engineering precautions that would reduce the threat of injury or death to the extent feasible.

Impact Analysis

As shown in Figure 3.5-2 none of the project elements are located within Alquist-Priolo Earthquake Fault Zones. The closest Alquist-Priolo Zone and active fault to the project area is the San Andreas Fault Zone located approximately 1,500 feet northeast of the Foothill Pump Station and 3,600 feet northeast of the Crafton Hills Pump Station. A fault trace has been identified that crosses the proposed pipeline alternative alignments on the 9600 block of Garnet Street (Jennings, 1994). However this fault has not shown evidence of displacement in the last 11,000 years and is not within a designated rupture zone that could result in surface rupture. The potential for surface rupture in any of the project locations is very small and does not pose a potential impact to the project.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. Surface rupture impacts would be less than significant because the proposed project is not located on any known active faults. Therefore, the project would not expose people or structures to substantial adverse effects involving surface rupture.

3.5.3.2 Seismic Ground Shaking

This section discusses the following CEQA Checklist question:

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

Significance Threshold

The proposed project would result in a significant impact if it were to expose people or buildings to loss, injury, or death resulting from development or improvements located on land susceptible to strong seismic ground shaking without taking the necessary design/engineering precautions that would reduce the threat of injury or death to the extent feasible.

Impact Analysis

All elements of the proposed project would likely experience at least one major earthquake (greater than Mw 7) sometime within the operational life of the project. Given the proximity to the San Andreas Fault Zone, ground shaking at the project site could be extreme, exceeding Mw 8 (Table 3.5-1). Earthquake-caused ground shaking could damage structures, including buildings, access roads, water conveyance and pumping equipment, engineered slopes, buried pipelines, and stream and creek embankments. Seismic ground shaking is an unavoidable hazard for facilities in the greater Los Angeles Basin. Although the San Andreas and San Jacinto Fault Zones are capable of generating the greatest ground motion due to their proximity, the degree of seismic hazard for this project considers ground shaking generated from an earthquake on any of the major active faults in the region.

Pipelines Alignment

A major earthquake would subject the proposed pipeline alternative alignments to ground motion. The pipeline would be designed to withstand the maximum probable ground motions that could be experienced in the area. DWR would include features into the pipeline design that would allow the pipe to respond to the seismic waves and accommodate lateral and vertical forces. The use of standard geotechnical and seismic design criteria would be used to reduce excessive earthquake response and potential damage or collapse thereby reducing potential earthquake damage from excessive ground shaking. If the pipeline did experience damage from excessive ground

movement, the system would be designed to shutdown, reducing water pressure and avoiding excessive water release. Ground shaking impacts to the pipeline would be less than significant.

Citrus Reservoir

The Citrus Reservoir would be created by excavating soil and compacting the foundation. It would be designed to accommodate site-specific ground motions. The reservoir would be below grade. A major release of water resulting from embankment failure would not occur since the reservoir would be below grade. Site investigation to date has determined that the proposed Citrus Reservoir site is geologically suitable for a reservoir (DWR, 2006). The cut slope east of the reservoir would comply with CBC design requirements for engineered slopes within seismically active zones. Although a regional earthquake could subject the proposed Citrus Reservoir site to moderate to strong ground shaking, compliance with seismic design criteria would ensure that impacts would remain less than significant.

Citrus Pump Station, Crafton Hills Pump Station Expansion, and Cherry Valley Pump Station

Ground shaking at the Citrus Pump Station, Crafton Hills Pump Station, and Cherry Valley Pump Station could cause structural damage to the structures and expose workers to injury from building structure damage and toppling machinery. Damage to essential equipment and electrical supply could result in temporary cessation of facility operations. Although earthquakes are unavoidable, the hazards associated with man-made structures can be minimized through appropriate design and engineering. The design of the Citrus and Crafton Hill pump stations would comply with the seismic related provisions of the current IBC as well as DWR design standards that take into account maximum earthquake ground shaking intensities resulting from local fault movements. The Cherry Valley pump station would not include any building expansion or construction. A new pump would be placed within the existing building. The proposed project would not change the earthquake hazard at the Cherry Valley Pump Station. Given that DWR would comply with building code requirements, impacts associated with structural damage or service disruption from a seismic event would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. The proposed project would not cause a substantial effect on structures or people resulting in loss, damage, or death. Construction design of the various elements of the project, in adherence with standard construction techniques and compliance with the most recent version of the IBC would ensure that the project design would account for the potential for extreme groundshaking. The impact would be less than significant.

3.5.3.3 Seismic Ground Failure Including Liquefaction

This section discusses the following CEQA Checklist question:

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Significance Threshold

The proposed project would result in a significant impact if it were to expose people or buildings to loss, injury, or death resulting from seismic related ground failure such as liquefaction without taking the necessary design/engineering precautions that would reduce the threat of injury or death to the extent feasible.

Impact Analysis

Elements of the proposed project, especially the pipeline alternative alignments that extend adjacent to the Santa Ana River, may be placed in an area with moderate to high liquefaction potential. Although groundwater is reported at depths exceeding 50 feet, some portions of the project area may contain shallower, perched zones of groundwater that has saturated the sand and gravel sediments. Under strong to violent ground shaking, these saturated sediments could be susceptible to localized liquefaction that would trigger liquefaction-induced ground failure during an earthquake. As part of the proposed project, DWR would conduct geotechnical investigations prior to the construction of the project elements. These investigations would identify any potential liquefiable sediment, if present, and recommend mitigation to correct the condition which would be incorporated into project specifications. The Citrus Reservoir would be lined to minimize seepage losses. Therefore, the soils beneath the reservoir would not be saturated. Although localized liquefiable conditions may exist, they are not considered a significant impact of the project because they would be corrected through standard engineering measures during the final design and construction.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. The proposed project would result in less-than-significant impacts related to liquefaction induced ground failure and service disruption. Design techniques and implementation of geotechnical recommendations by state licensed geotechnical engineers or engineering geologists would ensure impacts are less than significant.

3.5.3.4 Landslides or other Geologically Unstable Area

This section discusses the following CEQA Checklist question:

Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Significance Threshold

The proposed project would result in a significant impact if it were to locate project elements on an unstable geologic unit or soil that would potentially be subject to adverse effects caused by landslides, lateral spreading, subsidence, liquefaction or collapse.

Impact Analysis

The proposed project elements are located in areas with minimal topographic relief. The northern river wash area exhibits an irregular surface that slopes gently upward to the active river channel on the southern edge of the wash. Immediately south of the active river channel the elevation increases by approximately 40 feet to the edge of the citrus orchard. From this point, the topography is relatively even from Opal Avenue to the Crafton Hills Pump Station, increasing in elevation steadily at approximately 4 percent slope. Overall, the pipeline rises from an elevation of 1,520 feet amsl near the Foothill Pump Station to 2,220 feet amsl at the Crafton Hills Pump Station.

The proposed Citrus Reservoir and Citrus Pump Station site ranges from about 1,640 feet amsl on the west end to about 1,680 feet amsl on the east end. This 40-foot elevation change occurs over a distance of about 1,000 feet (about 4 percent). There are no identified landslide hazard areas that could affect the project site. The pipeline would be installed entirely under ground. Therefore, there is little likelihood that the proposed project elements would be affected or contribute to any slope failure or landslide hazards.

Settlement can occur in unconsolidated soils. Soils beneath the pipeline routes, reservoir, and pump station expansion areas, could experience settlement if the facility foundations are not properly prepared. DWR would conduct geotechnical surveys within the pump station footprint prior to construction to evaluate facility design requirements that would include providing protection against settlement.

Lateral spreading is a type of ground failure associated with liquefaction where horizontal displacement of surficial blocks of sediments in a subsurface layer occur on slopes ranging between 0.3 and 3 percent and commonly displaces the surface by several meters to tens of meters. As part of the proposed project, DWR would conduct geotechnical investigations prior to the construction of the project elements. These investigations would identify any potential liquefiable sediment, if present, and recommend measures to correct the condition that would be incorporated into project specifications. The implementation of geotechnical recommendations would ensure that the project would not be subject to adverse effects of lateral spreading, subsidence or collapse.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. The project area is located within areas that are relatively flat with no significant topographical relief. Therefore, there is little likelihood that the proposed project elements would be affected or contribute to any slope failure or landslide hazards. Implementation of geotechnical recommendations by state licensed geotechnical engineers or engineering geologists would ensure impacts from unstable geologic conditions are less than significant.

3.5.3.5 Soil Erosion and Loss of Topsoil

This section discusses the following CEQA Checklist question:

Would the project result in substantial soil erosion or the loss of topsoil?

Significance Threshold

The proposed project would result in a significant impact if the project's construction phase or operation phase would result in substantial soil erosion or the loss of topsoil.

Impact Analysis

During construction activities, erosion and top soil loss could occur during rain or high wind events. Stockpiled soils and exposed earth could erode if prevention measures are not implemented. A Storm Water Pollution Prevention Plan (SWPPP) to be implemented during construction would be a requirement of project approval. This plan would outline best management practices (BMPs) intended to reduce erosion. Mitigation Measure HYDRO-1 identifies specific BMPs that would be included in the SWPPP. The implementation of HYDRO-1 and the SWPPP would reduce erosion and soil loss to less-than-significant levels.

Operation of the proposed project could also result in erosion and soil loss if surface runoff increased or was channelized. Once installed, the pipeline would be underground and would not result in increased storm water flows. The Cherry Valley Pump Station expansion would occur entirely within the existing building and therefore would not contribute to new sources of operation erosion. Construction of the Citrus Reservoir and Citrus Pump Station would result in an increase of impervious surfaces, but any additional runoff would be kept on site and channeled to the reservoir. The expansion of the Crafton Hills Pump Station would slightly increase impervious surfaces. The roof of the pump station would convey precipitation to gutters, downspouts, and energy dissipating features, such as rock piles, which would reduce erosion potential. Compacted gravel would also be located at the fringe of all new concrete pads associated with foundations. This compacted gravel would intercept surface runoff from foundations and allow infiltration

without significant erosion or soil loss. With implementation of SWPPPs and Mitigation Measure HYDRO-1, the proposed project would not result in significant erosion.

Mitigation Measures

Implement HYDRO-1 (see Section 3.7).

Significance Conclusion

Less than significant with mitigation. Implementation of the BMPs identified in Mitigation Measure HYDRO-1 would reduce erosion and soil loss to less-than-significant levels.

3.5.3.6 Expansive Soil

This section discusses the following CEQA Checklist question:

Would the project be located on expansive soil as defined in Table 18-1-B of the Uniform Building Code (1994), creating a substantial risk to life or property?

Significance Threshold

The project would have a significant impact if any of the proposed elements were located on expansive soils that could pose a threat to life or property and no design/engineering mitigation options were implemented.

Impact Analysis

Soils with shrink-swell or expansive properties typically occur in fine-grained clay sediments and cause damage through volume changes as a result of a wetting and drying process. Structural damage may occur over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. The project components would be constructed in accordance with the IBC foundation requirements, reducing impacts to foundations if expansive soils are encountered. As part of the proposed project, DWR would conduct geotechnical investigations prior to the construction of the project elements. These investigations would identify any potential expansive soils and recommend measures to correct the condition that would be incorporated into project specifications.

The proposed Citrus Reservoir and Citrus Pump Station are located within a region that is composed of coarse grained sediments such as sands and gravels that include up to twenty percent by volume of cobbles and boulders as much as five feet in diameter. Therefore, expansive soils are highly unlikely to be present within this area. Soil expansion is not considered a potential geologic hazard in this area.

The proposed pipeline alternative alignments would be installed in excavated trenches that would be backfilled and compacted with engineered fill, reducing potential impacts on the pipeline from expansive soils.

The expansion of the Crafton Hills Pump Station would occur adjacent to the existing structures. Implementation of standard construction techniques would minimize the potential for structural damage resulting from expansive soils.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. Though expansive soils are highly unlikely to be present within the area, the proposed project would be designed to conform to the IBC foundation requirements which would reduce expansive soil impacts to foundations, if expansive soils are encountered. Implementation of geotechnical recommendations by state licensed geotechnical engineers or engineering geologists would ensure impacts from expansive soils are less than significant.

3.5.3.7 Soil Suitability for Septic System

This section discusses the following CEQA Checklist question:

Would the project be located on soils that are incapable of adequately supporting the use of septic system?

Significance Threshold

The proposed project would have a significant impact if a septic system was installed where soils could not adequately support such a system. In general, soils considered suitable for septic systems have permeabilities that are commensurate with the designed wastewater flows.

Impact Analysis

The Citrus Pump Station would require the installation of a septic leach field system to treat wastewater generated by employees at the pump station. The Pre-Feasibility Study performed for the proposed project included permeability tests which indicated that coarse-grained soils are predominate throughout the site that are considered moderately to highly permeable (DWR, 2006). This permeability test was conducted to determine a permeability value (K) that could be used to assist in a reservoir liner design. Results indicate that the permeability ranged from 2.49×10^{-3} to 6.55×10^{-4} cm/sec at the testing depth of approximately 53 to 102 feet below ground surface. Coarse-grained soils with moderate to high permeability, such as those present at the project site, are generally amenable to septic systems. However, a specific percolation test at the proper depth to evaluate the site's suitability for a septic system was not completed. Therefore, implementation

of Mitigation Measure GEO-1 would ensure that the site is suitable for a septic system prior to its construction. The septic system design would be consistent with applicable design standards imposed by the County of San Bernardino.

Mitigation Measures

GEO-1: A percolation test shall be conducted at the location of the proposed septic system. The results of the percolation test shall be used to design a functional septic system for the Citrus Pump Station. The design of the system shall meet the standards established by San Bernardino County Division of Environmental Health Services.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measure GEO-1 would ensure that the site of the Citrus Pump Station is suitable for a septic system prior to its construction.

3.5.3.8 Loss of Availability of Known Mineral Resources

This section discusses the following CEQA Checklist question:

Would the project result in the loss of availability of a known mineral resource that would be of local value or of value to the region and the residents of the state?

Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Significance Threshold

The proposed project would result in a significant impact if it were to prevent future accessibility to any known mineral resources considered of value to the local region or the state and or as mapped by a local planning document.

Impact Analysis

The proposed pipeline would cross the Santa Ana River. Alluvial deposits associated with the Santa Ana River could potentially contain aggregate resources suitable for construction purposes. Alluvial deposits associated with the Santa Ana River wash underlie all of the project elements. However, none of the proposed project components would be located within an identified mineral resource area associated with a general plan, specific plan, or other land use plan (San Bernardino County, 2006). The San Bernardino Valley Water Conservation District is preparing a land use plan for the Santa Ana River wash in the project location. The land use plan designates aggregate mining areas to the west of the project. The proposed project would traverse areas reserved for water conservation and open space. Proposed aggregate mining areas would not be affected by the pipeline corridor.

None of the proposed alternative alignments would be located within any existing mining operations. The proposed project would parallel the existing MWD inland feeder pipeline which would minimize potential for reducing access to mineral resources in the wash area. Therefore, the potential for any of the proposed alternative alignments to impact the accessibility of known mineral resources is considered less than significant.

The Citrus Reservoir would be located in an area that is currently a citrus orchard. Although it is probable that aggregate is present beneath the proposed reservoir, the site is not within the river wash or designated mineral resource zone. Construction of the reservoir would generate about 1.8 million cubic yards of material that may be hauled to a local rock quarry to be processed and used as a mineral resource. Therefore, the potential impact to available mineral resources is less than significant.

The Crafton Hills Pump Station Expansion would be located within existing DWR property that is developed with an existing pump station. The expanded structure would not result in the loss of availability of mineral resources.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. The proposed project would not result in a significant loss of available mineral resources nor would it limit access to designated mineral resource recovery sites.

3.5.3.9 Mitigation Measure Summary Table

Table 3.5-3 presents the impacts and mitigation summary for Geologic Resources.

**TABLE 3.5-3
IMPACTS AND MITIGATION SUMMARY**

Proposed Project Impact	Mitigation Measure	Significance after Mitigation
Surface Rupture: The proposed project would not be located in areas susceptible to surface rupture.	None required	Less than significant
Seismic Ground Shaking: Strong seismic ground shaking would subject the proposed project to a less-than-significant impact.	None required	Less than significant
Seismic Ground Failure including Liquefaction: Seismic ground failure including liquefaction would subject the proposed project to a less-than-significant impact.	None required	Less than significant
Landslides or other Geologically Unstable Area: Landslides and the presence of other geologically unstable areas would subject the proposed project to a less-than-significant impact.	None required	Less than significant

TABLE 3.5-3 (Continued)
IMPACTS AND MITIGATION SUMMARY

Proposed Project Impact	Mitigation Measure	Significance after Mitigation
Soil Erosion and Loss of Topsoil: The proposed project would result in a less-than-significant impact on soil erosion.	Implement HYDRO-1	Less than significant
Expansive Soil: Expansive soils would subject the proposed project to a less-than-significant impact.	None required	Less than significant
Soil Suitability for Septic System: The proposed project would require site specific septic system design.	GEO-1	Less than significant
Mineral Resources: The proposed project would have a less-than-significant impact on the availability of known mineral resources.	None required	Less than significant

3.6 Hazards and Hazardous Materials

This section assesses potential impacts that could arise as a result of the proposed project associated with hazardous materials use, discovery of hazardous materials in the subsurface, and hazards associated with wildfires and airports. Section 25501 (o) of the California Health and Safety Code defines "hazardous material" as any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material that would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

3.6.1 Regulatory Framework

3.6.1.1 Federal

Occupational Safety and Health Administration

The federal Occupational Safety and Health Administration (OSHA) enforces regulations covering the handling of hazardous materials in the workplace. The regulations established in the Code of Federal Regulations (CFR) Title 29 are designed to protect workers from hazards associated with encountering hazardous materials at the work site. The regulations require certain training, operating procedures, and protective equipment to be used at work sites that could encounter hazardous materials.

Resource Conservation and Recovery Act

Under the federal Resource Conservation and Recovery Act (RCRA), individual states may implement their own hazardous waste programs in lieu of RCRA as long as the state program is at least as stringent as federal RCRA requirements and is approved by the USEPA. The USEPA approved California's RCRA program, called the Hazardous Waste Control Law (HWCL), in 1992. California Environmental Protection Agency (Cal EPA) and the Department of Toxic Substance Control (DTSC), a department within Cal EPA, regulate the generation, transportation, treatment, storage, and disposal of hazardous waste. DTSC has primary regulatory responsibility for hazardous materials, but can delegate enforcement responsibilities to local jurisdictions that enter into agreements with DTSC for the generation, transport, and disposal of hazardous materials under the authority of the HWCL.

Toxic Substance Control Act

The Toxic Substances Control Act (TSCA) of 1976 was enacted by Congress to give the USEPA the ability to track the 75,000 industrial chemicals currently produced or imported into the United States. The USEPA repeatedly screens these chemicals and can require reporting or testing of those that may pose an environmental or human-health hazard. The USEPA can ban the manufacture and import of those chemicals that pose an unreasonable risk.

CERCLA

The *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) was developed to protect the water, air, and land resources from the risk created by past chemical disposal practices. This act is also referred to as the Superfund Act, and the sites listed under it are referred to as Superfund sites. Under CERCLA, the EPA maintains a list, known as CERCLIS, of all contaminated sites in the nation that have in part or are currently undergoing clean-up activities. CERCLIS contains information on current hazardous waste sites, potential hazardous waste sites, and remedial activities. This includes sites that are on the National Priorities List (NPL) or being considered for the NPL.

3.6.1.2 State

California Code of Regulations

The California Code of Regulations (CCR), Title 22, Section 66261.20-24 contains technical descriptions of characteristics that would classify wasted material, including soil, as hazardous waste. When excavated, soils having concentrations of contaminants higher than certain acceptable levels must be handled and disposed as hazardous waste.

State Water Resources Control Board

SWRCB and the RWQCBs administer the requirements of the Clean Water Act that regulate pollutant discharges into waterways of the US. The Santa Ana RWQCB (SARWQCB) enforces site cleanup regulations for illicit discharges that have resulted in contamination of groundwater in the project area.

California Hazardous Materials Release Response Plans and Inventory Law

The California Hazardous Materials Release Response Plan and Inventory Law of 1985 (Business Plan Act) requires that businesses that store hazardous materials onsite prepare a business plan and submit it to local health and fire departments. The business plan must include: details of the facility and business conducted at the site; an inventory of hazardous materials that are handled and stored onsite; an emergency response plan; and a safety and emergency response training program for new employees with an annual refresher course.

California Occupational Safety and Health Administration

In California, the California Occupational Safety and Health Administration (Cal OSHA) regulates worker safety similarly to the federal OSHA. OSHA has developed worker safety regulations for the safe abatement of lead-based paint and primers (Lead in Construction Standard, Title 8 CCR 1532.1).

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program

In January 1996, Cal EPA adopted regulations, which implemented a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The program has six elements: (1) hazardous waste generators and hazardous waste onsite treatment; (2) underground storage tanks (USTs); (3) aboveground storage tanks (ASTs); (4) hazardous materials release response plans and inventories; (5) risk management and prevention programs; and (6) Unified Fire Code hazardous materials management plans and inventories. The plan is implemented at the local level and the agency responsible for implementation of the Unified Program is called the Certified Unified Program Agency (CUPA). In San Bernardino County, the Department of Public Health, Environmental Health Services is the designated CUPA.

Department of Toxic Substance Control

The DTSC is responsible for regulating the use, storage, transport, and disposal of hazardous substances in the state. DTSC maintains a Hazardous Waste and Substances Site List for site cleanup. This list is commonly referred to as the Cortese List. Government Code section 65962.5 requires the Cal-EPA to update the Cortese List at least annually. DTSC is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List.

3.6.1.3 Local

San Bernardino County

AB 2948 (Chapter 1504, Statutes of 1986), commonly known as the Tanner Bill, authorized counties to prepare Hazardous Waste Management Plans (HWMPs) in response to the need for safe management of hazardous wastes. On March 31, 1987, the County of San Bernardino Board of Supervisors authorized the preparation of the County's HWMP. The preparation of the HWMP included extensive public participation. Consistent with state law, an advisory committee was established to advise County staff and local government officials on issues pertaining to management of hazardous wastes.

The HWMP was adopted by the County of San Bernardino Board of Supervisors and approved by the California Department of Health Services in February 1990. The HWMP serves as the primary planning document for the management of hazardous waste in San Bernardino County. The HWMP identifies the types and amounts of wastes generated in the County; establishes programs for managing these wastes; identifies an application review process for the siting of specified hazardous waste facilities; identifies mechanisms for reducing the amount of waste generated in the County; and identifies goals, policies, and actions for achieving effective hazardous waste management.

The San Bernardino County Fire Department – Hazardous Materials Division is the local agency responsible for the enforcement of a variety of hazardous materials management requirements.

They are the state designated CUPA for the County of San Bernardino (excluding the City of Victorville). The purpose of the CUPA program is to provide a comprehensive approach to reduce the overlapping and sometimes conflicting requirements of different governmental agencies. The CUPA provides consolidation and consistency in reporting requirements, permit formats, inspection criteria, enforcement standards, and fees for various hazardous materials programs. The CUPA is required by state law to maintain a list of facilities within the County that are known to use, store, and/or generate hazardous materials/wastes. Facilities that handle hazardous materials or generate hazardous waste must obtain a permit from the CUPA. The San Bernardino County Fire Department manages six hazardous material and hazardous waste programs:

- Hazardous Materials Release Response Plans and Inventory (Business Plan).
- California Accidental Release Program.
- Underground Storage Tanks.
- Aboveground Petroleum Storage Spill Prevention Control and Countermeasure (SPCC).
- Hazardous Waste Generation and Onsite Treatment.
- Hazardous Materials Management Plans and Inventory Statements under Uniform Fire Code Article 80.

3.6.2 Setting

3.6.2.1 Regional Setting

The proposed project area is located at the confluence of the Santa Ana River and Mill Creek in an area dominated by the river floodplain, undeveloped and undisturbed natural areas, groundwater recharge basins, and commercial agriculture. The region has historically been dominated by citrus orchard operations. Active aggregate mining operations exist west of the project site. Other historic industrial activities in the region have included the Redlands Municipal Airport and the former Lockheed Propulsion Mentone Facility located within the project area.

3.6.2.2 Existing Environment

Hazardous Waste Sites

In San Bernardino County, as of January 1, 2006, there are 55 potential hazardous waste sites that have been listed under the Comprehensive Environmental Response, Compensation, and Liability Act (CECLA), also known as Superfund. The CERCLIS includes four of sites in the County which have been placed on the NPL; an inventory of hazardous waste sites that have been assigned highest priority for cleanup. These sites are:

- Marine Corps Logistics Base in Barstow;
- George Air Force Base in Victorville;
- Newmark Groundwater Contamination in San Bernardino; and
- Norton Air Force Base in San Bernardino.

One property in the project area, 1500 Crafton Avenue is listed on the CERLIS database for San Bernardino County. However, the 1500 Crafton Avenue property is not listed on the NPL. The Redlands Airport at 1745 Sessums Drive, located to the west of the proposed project is also listed on the CERLIS database but is not on the NPL.

Table 3.6-1, below, lists the properties in the City of Redlands, as of April 2008, that are regulated by the DTSC's Site Mitigation and Brownfields Reuse Program where extensive investigation and/or cleanup actions are planned, have been completed, and where land use restrictions remain. This list includes properties which may be listed on other Federal lists.

**TABLE 3.6-1
DTSC LISTED SITES (CORTESE)**

Site Name	Site Type	Status	Address
Crafton-Redlands Area	State Response	Refer: RWQCB	Bunker Hill Groundwater Sub-Basin
Edison/Redlands II (Redlands BL) MGP	Voluntary Cleanup	Active – Land Use Restrictions	501-525 W. Redlands Bl. at Kendal
Lockheed Propulsion Corporation	State Response	Refer: RWQCB	1500 Crafton Avenue
Co Cal Gas/Redlands I (State St.) MGP	Voluntary Cleanup	Active	State St, at Redlands Bl.
Teledyne Battery Products	Haz. Waste – Non-Operating	Active	840 W. Brockton Ave.

SOURCE: <http://www.envirostor.dtsc.ca.gov/public/> (Accessed April, 2008)

Based on information provided by the San Bernardino County Fire Department, Hazardous Materials Division, as the CUPA for the County, the San Bernardino County Fire Department, Hazardous Material Division, has approximately 6,500 permits on file for businesses that handle hazardous materials or wastes. This number is a general figure based on known permit holders and can vary as businesses modify their activities.

Groundwater

The project overlies the Bunker Hill subbasin of the Upper Santa Ana Valley Groundwater Basin. The basin is referred to as the San Bernardino Basin Area (SBBA). Total dissolved solids (TDS) concentrations in public supply wells in the SBBA range from 150 to 550 mg/L, with an average of 324 mg/L (DWR 2003).

According to DWR's Bulletin 118-Update 2003, the SBBA is affected by five major groundwater contaminant plumes of volatile organic compounds (VOCs) that include the following:

- (1) the Crafton-Redlands plume, with trichloroethylene (TCE) and lower levels of perchloroethylene (PCE) and dibromochloropropane (DBCP);

- (2) the Norton Air Force Base TCE and PCE plume;
- (3) the Muscoy plume near the Shandon Hills, which is a Superfund site with TCE and PCE;
- (4) the Newmark plume near the Shandon Hills, which is a Superfund site with TCE and PCE; and
- (5) the Santa Fe plume with PCE, TCE, and 1,2 dichloroethylene (1,2-DCE) contamination.

The proposed project is approximately two miles east of the eastern-edge of the Crafton-Redlands plume. This plume is thought to have originated in the project area and to have migrated westward offsite. Together with the Norton Plume several groundwater wells owned by the cities of Riverside, Redlands, and Loma Linda have been impaired. The SARWQCB issued Investigation Order 94-11 and Cleanup and Abatement Orders No. 94-37 and 97-58, as amended by 01-56, which required the Lockheed Martin Corporation (Lockheed) to prepare contingency plans to address impacts of the plume on water supply wells. Lockheed has installed treatment systems along the leading edge of the contaminate plume. These systems are relocated as the plume migrates. Lockheed submits monitoring reports to the SARWQCB summarizing data compiled by the remediation system. According to SARWQCB,¹ the groundwater plume has migrated up to eleven miles from the former Mentone Facility, in a western direction. SARWQCB stated that recharge basins situated near the site may have flushed most of the contaminants from soil. SARWQCB noted that only very low levels (up to 10 µg/l) of VOCs have been reported recently in wells on the former Lockheed Propulsion Mentone Facility site.

The summary of sampling results for the second quarter of 2007 for groundwater monitoring at the former Lockheed Propulsion Company (LPC) property (Tetra Tech, 2007) was provided by the Santa Ana Regional Water Quality Control Board. This quarterly groundwater sampling report included test reports for monitoring wells MW-4, MW-9p, and MW-10p. These wells are located between the east-west segments of Alternative Alignments 1 and 2, east of Crafton Avenue within SBVMWD percolation basin area. All three wells are located near Crafton Avenue. Results from the groundwater sampling show no detectable levels of TCE or perchlorate. The groundwater sampling dates were on May 16th and 17th, 2007.

Database Records Search

Environmental Data Resources (EDR) conducted a database search of federal, state, and local regulatory agencies and government or tribal lists for known historically contaminated properties, for businesses that use, generate, or dispose of hazardous materials or petroleum products in their operations, and for contaminated sites that are currently undergoing monitoring or site remediation within the project vicinity (EDR, 2007).

A total of 60 environmental database records were found in 16 databases for the project area; some sites were listed on multiple databases. The EDR report, provided in **Appendix D**, illustrates the locations of the regulatory listed sites within 1/4-mile of the project corridor.

¹ Personal communication with Mr. Kamron Saremi, SARWQCB Project Manager for former Lockheed Propulsion Mentone Facility site. January 2, 2008

The EDR report identified nine properties within the proposed project alternative alignments on one or more regulatory agency databases. The databases identify facilities that handle hazardous materials or generate hazardous waste, but that have not necessarily had a release to the environment. Only one site identified in the database search identifies the potential for a former spill to have resulted in contaminated soil or groundwater within the proposed project area. This site was the former location of the Lockheed Propulsion Mentone Facility. This site was identified on twelve regulatory agency lists as having impacted soil and groundwater resources. According to information provided in the EDR Report, property has been under oversight from the SARWQCB for over 20 years. Three consent orders are in place between the SARWQCB and the responsible parties at the site. These orders require that the responsible parties conduct a remedial investigation and address any associated contamination in the groundwater.

3.6.3 Impact Assessment

The following sections discuss the key issue areas identified in the *CEQA Guidelines* and Department specific thresholds with respect to the project's potential effect to humans and the environment through the use, transports, and or discovery of hazardous materials. Significance thresholds are identified and a significance conclusion is made following the discussion.

3.6.3.1 Soil or Groundwater Contamination during Construction

This section discusses the following significance threshold question:

Would the project, construction or operation, result in the contamination of soil, groundwater, and or increase the risk of hazardous material exposure to construction workers, facility operators, or to the environment?

Significance Threshold

The project would have a significant impact if the project would result in the contamination of soil or groundwater during construction activities and or cause an increase in the risk of exposure to humans and the environment.

Impact Analysis

The proposed project would require excavation for construction of the pipeline, the Citrus Pump Station, Citrus Reservoir, as well as expansion of the Crafton Hills Pump Station. The construction of the proposed pipeline elements would require excavation within roadways, recharge pond areas, industrial properties, and agricultural areas. The pipeline excavation would range between 14 to 50 feet deep. The proposed Citrus Reservoir would be excavated to a depth of 45 to 70 feet. Disturbance and exposure to soil or groundwater impacted by hazardous materials, pesticides, or petroleum products during construction could expose construction workers, the public, or the physical environment to chemical contaminants. As previously described, the former Lockheed Propulsion Mentone Facility is under regulatory oversight for soil and groundwater cleanup from VOC contamination. The east-west segments of Alternative Alignments 1 and 2 are located adjacent to this property. Remediation of the property has been

occurring over many years under the oversight of the SARWQCB. Currently, low levels of VOC contaminants are reported in soil and groundwater samples taken from the project site that are well below identified Maximum Contaminant Levels (MCLs) for constituents of concern². The quarterly groundwater sampling report (Tetra Tech, 2007) required by SARWQCB investigation Order 94-11 and Cleanup and Abatement Orders No. 94-37 and 97-58, as amended by 01-56, shows that no detectable levels of TCE or perchlorate were reported in May 2007 groundwater quality tests. Water samples were taken from monitoring wells located between the east-west segments of Alternative Alignments 1 and 2, east of Crafton.

In addition, all pipeline alternative alignments pass through citrus orchards, which may be impacted by legacy pesticide use that may include DBCP, a soil fumigant no longer used in the area, but that was commonly used in the citrus growing industries over the past several decades (USGS, 2005).

Based on reported records in agency databases, the potential for encountering impacted soils in much of the project area is low since few hazardous waste sites have been reported in the area. However, excavation through the former Lockheed Propulsion Mentone Facility may encounter low levels of VOCs, and soils excavated within the citrus orchard may encounter residual levels of pesticides used historically in citrus growing operations. Disturbance, exposure, stockpiling, or disposal of these soils could expose workers, the public, and the environment to hazardous materials and therefore, as stated in the significance criteria, would be considered a significant impact. Implementation of the mitigation measures provided below would ensure that impacts associated with exposure to hazardous materials at the site would remain less than significant.

Mitigation Measures

HA-1: DWR shall collect soil samples within the pipeline right-of-way west of Crafton Avenue to the Mill Creek levee and within the citrus orchard. The samples shall be analyzed for VOCs, organophosphate pesticides, and dibromochloropropane. The number of samples and sampling intervals shall be sufficient to accurately assess the soil quality along the pipeline corridors. If concentrations of target analytes are detected at concentrations considered to be a potential health threat, the County and the SARWQCB shall be notified and impacted soil shall be removed or remediated in accordance with applicable state or county requirements.

HA-2: DWR shall incorporate into contract specifications the requirement that, in the event that evidence of potential soil contamination, including soil discoloration, noxious odors, debris, or buried storage containers are encountered during construction, the contractor(s) will have available, a qualified environmental consulting firm to perform sampling and analysis of potentially hazardous substances and coordinate with the appropriate regulatory agencies, if necessary. The required handling, storage and disposal methods shall depend on the types and concentrations of chemicals identified in the soil. Any site investigations or remediation shall comply with applicable laws.

² Personal communication with Mr. Kamron Saremi, SARWQCB Project Manager for former Lockheed Propulsion Mentone Facility site. January 2, 2008

HA-3: If underground storage tanks (USTs) are discovered during construction, the UST, associated piping, and impacted soil shall be removed by a licensed and experienced UST removal contractor. The UST and contaminated soil shall be removed in compliance with applicable county and state requirements.

HA-4: Groundwater generated by dewatering shall be disposed of or discharged in accordance with relevant rules and regulations. Discharge of groundwater to the sewer system or off-site disposal shall comply with applicable county and state discharge regulations.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measures HA-1 through HA-4 would reduce the risk that humans and the environment would be exposed to hazardous materials by requiring soil assessments and proper disposal of contaminated soil.

3.6.3.2 Well Contamination

This section discusses the following significance threshold question:

Would the project disturb and/or truncate an existing groundwater well on the project site, which could increase the potential for contaminants to enter and pollute groundwater through the wells?

Significance Threshold

The project would have a significant impact if it would involve excavation that would disturb or truncate an existing groundwater well on the project site, which could increase the potential for contaminants to enter and pollute groundwater through the wells.

Impact Analysis

The proposed project would require excavation on agricultural lands, groundwater recharge basins, and former industrial properties to install the project facilities. Since agricultural operations have occupied this area for many years, there is a possibility that unused, unidentified, or abandoned groundwater wells remain within the boundaries of the project. Groundwater monitoring wells installed on the former Lockheed Propulsion Mentone Facility property may be within the pipeline construction corridor and may need to be properly abandoned. As required by the following mitigation measure, DWR would decommission any wells within the proposed project footprint.

Mitigation Measures

HA-5: Prior to the commencement of excavations, DWR shall conduct a comprehensive well survey to locate, identify, and confirm all existing groundwater wells within the construction zone. Information for well locations shall be obtained, if available, from DWR, San Bernardino County Environmental Health Services, RWQCB, and the former property owners. Groundwater wells, including monitoring wells, shall be properly

destroyed and removed in accordance with DWR Well Standards. Replacement wells shall be constructed by DWR if requested by owners of wells destroyed by the project.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measure HA-5, requiring the removal of any existing wells within the construction zone, would reduce the potential for contaminants to enter and pollute groundwater through existing groundwater wells to a less-than-significant level.

3.6.3.3 Hazardous Materials Used during Construction

This section discusses the following significance threshold question:

Would construction of the proposed project expose the environment, workers and the public to hazardous materials?

Significance Threshold

The project would have a significant impact if construction of the project would result in the increase of exposure of hazardous materials to the environment, workers and the public.

Impact Analysis

Construction activities require the use of hazardous materials such as fuels, oils, solvents, and glues. Exposure or inadvertent release of these materials into the environment could expose construction workers, the public, and/or the environment to potentially hazardous conditions, or adversely impact soil, surface waters, or groundwater quality, especially during construction areas within the groundwater recharge pond area. Potential impacts associated with use and potential inadvertent releases of hazardous materials during construction activities would be less than significant with implementation of the following mitigation measure.

Mitigation Measures

HA-6: Consistent with Storm Water Pollution Prevention Plan (SWPPP) requirements identified in the Hydrology and Water Quality section of this document, DWR shall require the contractor to implement best management practices (BMPs) for handling hazardous materials on the construction site. BMPs will include the following:

- Follow manufacturers' recommendations and regulatory requirements for use, storage, and disposal of chemical products and hazardous materials used in construction;
- During routine maintenance of construction equipment, properly contain and remove grease and oils;
- Properly dispose of discarded containers of fuels and other chemicals; and

- Provide secondary containment at designated fueling locations.

Significance Conclusion

Less than significant with mitigation. Implementation of the construction BMPs identified in Mitigation Measure HA-6 would reduce the risk of inadvertent releases of hazardous materials during construction to a less-than-significant level.

3.6.3.4 Use of Hazardous Materials during Operation of Facilities

This section discusses the following CEQA Checklist questions:

Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Significance Threshold

The project would have a significant impact if the project would result in the increase of exposure of hazardous materials to the public and the environment during the operations of the facilities.

Impact Analysis

The Citrus Reservoir could require the use of chemicals such as algae control dyes, flocculants, and other water quality chemicals. The pump stations would be powered by Southern California Edison transmission lines. Emergency backup generators would be fueled by petroleum. Exposure or inadvertent release of large quantities of chemicals or petroleum products into the environment could expose construction workers, the public, and/or the environment to potentially hazardous conditions, or could adversely impact soil, surface waters, or groundwater quality. The amount of chemicals stored at the pump station would be the minimum amount required for operational maintenance. The chemicals would be used as directed by the manufacturer.

In addition, maintenance of the pipeline would require the use of herbicides to keep weeds away from access blow-off valves, vaults, air and vacuum valves, flow meters, inline valves and cathodic protection. These facilities would be installed periodically along the entire alignment. Weeds would be removed in a two to five foot clearing area around each above ground facility.

Potential impacts associated with use and potential inadvertent releases of hazardous materials during operation and maintenance activities would be less than significant with implementation of the following mitigation measures.

Mitigation Measures

HA-7: For facilities within 1,500 feet of the Santa Ana River channel and within the Woollystar Preservation Area, weed abatement will be conducted manually. No herbicides will be used in these areas.

HA-8: DWR will ensure that herbicides are stored and applied according to manufacture specifications and in compliance with DWR's Division of Operations and Maintenance standard practices.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measures HA-7 and HA-8 would reduce the risk of inadvertent exposure of hazardous materials to the public and the environment during project operation by requiring proper handling of herbicides.

3.6.3.5 Hazardous Material Sites

This section addressed the following CEQA Checklist question:

Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Significance Threshold

The project would have a significant impact if construction of the project would occur on a site which has been listed on a hazardous material site list pursuant to Government Code Section 65962.5 and approved remediation measures were not implemented to clean up the site.

Impact Analysis

As shown in Table 3.6-1, 1500 Crafton Avenue is a listed on the Cortese List (Government Code Section 65962.2). The proposed pipeline Alternative Alignment 2 and a segment of Alternative Alignment 1 would run adjacent to this property. Construction along these pipeline routes could encounter contaminated soils or groundwater. Mitigation Measures HA-1 through HA-4 would ensure that any encountered hazardous materials would be properly handled and disposed of.

Mitigation Measures

Implement Mitigation Measures HA-1, HA-2, HA-3, and HA-4.

Significance Conclusion

Less than significant with mitigation. Though a portion of the proposed project would be located adjacent to a site listed on the Cortese List, implementation of Mitigation Measures HA-1 through HA-4 would ensure that any hazardous materials encountered would be properly handled and disposed of.

3.6.3.6 Hazardous Materials Use near Schools

This section discusses the following CEQA Checklist question:

Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Significance Threshold

A significant impact would result if the project emitted or handled hazardous materials within a quarter mile of a school.

Impact Analysis

The nearest school to the project site is a private high school located at 9355 Opal Ave. The pipeline would be located within a quarter mile of this school. However, the pipeline would not be used to move hazardous materials. The northwest portion of the proposed Citrus Reservoir would be located within a quarter of a mile of the high school. The reservoir is not within a quarter mile radius of any other school. As indicated above, the Citrus Reservoir could require the use of chemicals such as algae control chemicals, flocculates, and other water quality chemicals. The chemicals would be stored at the Citrus Pump Station. Herbicides would be used to keep weeds away from access blow-off valves, vaults, air and vacuum valves, flow meters, inline valves and cathodic protection that occur periodically along the pipeline. These chemicals are not volatile and would not pose an acute hazard to surrounding land uses through the release of toxic vapors or clouds. Moreover, the materials would be stored with secondary containment features to reduce leakage in the event of accidental spillage. The amount of chemicals stored at the pump station would be the minimum amount required for operational maintenance. The chemicals would be used as directed by the manufacturer.

The Mentone School on Crafton Avenue would be within ¼ mile of Alternative Alignment 2 and ½ mile from Alternative Alignment 1. However, the pipeline would not be used to move hazardous materials; raw water deliveries would be made through the pipeline.

While hazardous materials could be used during the routine maintenance and operation of the reservoir and pipeline features, the use of these materials would be limited to the minimum amount required. Implementation of Mitigation Measure HA-8 would ensure that schools would not be exposed to hazardous or acutely hazardous materials or substances.

Mitigation Measures

Implement Mitigation Measure HA-8.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measure HA-8, which requires proper handling of herbicides, would ensure that schools would not be exposed to hazardous materials or substances.

3.6.3.7 Grassland and Wildland Fires

This section discusses the following CEQA Checklist question:

Would the proposed project expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Significance Threshold

The project would have a significant impact if construction of the project would expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Impact Analysis

Portions of the proposed project are located in rural and agricultural land that may be susceptible to wildland fires. According to the significance criteria, an impact would occur if the project exposed people or structures to the hazards of wildland fires. Implementation of the following mitigation measures would ensure that impacts remain less than significant.

Mitigation Measures

HA-9: During construction, all staging areas, welding areas, or areas slated for development using spark-producing equipment will be cleared of dried vegetation or other material that could ignite. Any construction equipment that includes a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the proposed project, DWR shall require all vehicles and crews working at the project site to have access to functional fire extinguishers at all times. In addition, construction crews are required to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measure HA-9 would reduce the risk of wildland fires to a less-than-significant level.

3.6.3.8 Airport Hazards

This section discusses the following CEQA Checklist questions:

For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Significance Threshold

The project would have a significant impact if it was located within an airport land use plan or within two miles of an airport where no plan has been adopted and the project did not account for or design for airport safety hazards for people residing or working in the area.

Impact Analysis

The proposed project is located within the Redlands Municipal Airport land use plan. See Section 3.8 (Land Use) of this EIR for an analysis of land use impacts with respect to the Redlands Municipal Airport. As discussed in Section 3.8, the proposed project would comply with construction requirements near the airport to avoid conflicting with airport operations. The pump station and electrical system would comply with height restrictions imposed by the local airport.

As discussed in Section 3.8, the Federal Aviation Administration (FAA) suggests that airports prepare Wildlife Hazard Management Plans (WHMP) to monitor, evaluate, and mitigate hazards associated with land uses surrounding the airport. The potential hazards associated with the Citrus Reservoir would be reduced to less-than-significant levels with the implementation of Mitigation Measure LU-7. With design features and a mitigation plan in place to adequately reduce the hazard, the proposed project would avoid creating hazards to the airport that could affect local businesses and residences near the project area.

Mitigation Measures

Implement Mitigation Measure LU-7 (see Section 3.8).

Significance after Mitigation

Less than significant. Implementation of Mitigation Measure LU-7 would ensure that the proposed project is designed to be compatible with airport operations. Impacts to public safety would be less than significant.

3.6.3.9 Emergency Response Plans

This section discusses the following CEQA Checklist question:

Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Significance Threshold

The project would have a significant impact if implementation of the project physically interfered with an adopted emergency response plan or evacuation route defined by a local jurisdiction.

Impact Analysis

The proposed project area is not defined by any of the local jurisdictions as a part of an emergency response plan or an emergency evacuation route. Most of the project construction, including pipeline excavation, reservoir excavation, pump station construction, and pump station expansion would occur on land adjacent to the open river wash space. Thus, the construction and operation would not interfere with an emergency response plan or an evacuation route. However, portions of the proposed pipeline routes would be located within public roadways. During the construction of certain pipeline segments, partial road closure would be required to accommodate pipeline installation. Road closures and construction equipment would constrict traffic flow through the area. As described in Section 3.11 (Transportation and Traffic), a Traffic Control Plan would be required to reduce traffic congestion from construction activities. With the implementation of this plan, the construction of the proposed pipeline would have a less-than-significant impact on roadway circulation. The proposed project would have a less-than-significant impact on emergency response plans and or emergency evacuation routes.

Mitigation Measures

Implement Mitigation Measure TR-3 (see Section 3.11).

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measure TR-3, requiring a traffic control plan, construction of the proposed pipeline would have a less-than-significant impact on emergency response plans and emergency evacuation plans.

3.6.3.10 Mitigation Measure Summary Table

Table 3.6-2 on the following page presents the impacts and mitigation summary for Hazards and Hazardous Materials.

**TABLE 3.6-2
IMPACTS AND MITIGATION SUMMARY**

Proposed Project Impact	Mitigation Measure	Significance after Mitigation
Soil or Groundwater Contamination During Excavation: The project would have a less-than-significant impact contaminating soil or groundwater during excavation with mitigation.	HA-1 through HA-4	Less than significant
Well Contamination: The proposed project would have a less-than-significant impact on well contamination with mitigation.	HA-5	Less than significant.
Hazardous Materials Used During Construction: Materials used during the construction of the project would have a less-than-significant impact on the surrounding environment with mitigation.	HA-6	Less than significant
Use of Hazardous Materials During Operation of Facilities: The proposed project would have a less-than-significant impact on the surrounding environment during operation of the facilities with mitigation.	HA-7 and HA-8	Less than significant
Hazardous Material Sites: The proposed project would be located near a hazardous material site.	Implement HA-1, HA-2, HA-3, and HA-4	Less than significant
Hazardous Material Use Near Schools: Portions of the proposed pipeline and reservoir would be located within a quarter mile of a high school.	Implement HA-8	Less than significant
Grassland and Wildland Fires: The proposed project would have a less-than-significant impact related to grassland or wildland fire hazards with mitigation.	HA-9	Less than significant
Airport Hazards: The proposed project would have less-than-significant impacts related to Airport safety hazards.	Implement LU-7	Less than significant
Emergency Response Plans: The proposed project would not conflict with the implementation of an emergency response plan or interfere with an evacuation route.	Implement TR-3	Less than significant

Intentionally left blank.

3.7 Hydrology and Water Quality

This section describes local surface water and groundwater resources and discusses regional water quality issues. This section also evaluates the proposed project's potential impacts on water resources in the project area.

3.7.1 Regulatory Framework

3.7.1.1 Federal

Clean Water Act

Under the CWA of 1972, the USEPA seeks to restore and maintain the chemical, physical, and biological integrity on the nation's waters by implementing water quality regulations. The National Pollutant Discharge Elimination System (NPDES) permit program, established by Section 402 of the CWA, regulates discharges into waters of the United States. The USEPA has delegated authority for issuing NPDES permits in California to the SWRCB, which has nine regional boards. The SARWQCB regulates water quality in the project area. The NPDES program establishes point and non-point (e.g., storm water) source discharge pollutant thresholds and management practices for certain construction, industrial and municipal facilities and activities.

Section 404 of the Clean Water Act established a program to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. The USACE has primary federal responsibility for administering Section 404. Activities in waters of the U.S. regulated under this program include the placement of fill for development, water resource, infrastructure, and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into waters of the U.S.

Section 401 of the CWA provided the authority for the state-operated 401 Certification Programs. The 401 certification process is used by the state to evaluate potential effects of projects requiring Section 404 permits.

Federal Emergency Management Agency

Under Executive Order 11988, the Federal Emergency Management Agency (FEMA) is responsible for the management and mapping of areas subject to flooding during a 100-year flood event (i.e., one percent chance of occurring in a given year). FEMA requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain. Portions of the proposed pipeline would be located within the Santa Ana River 100-year floodplain.

3.7.1.2 State

State Water Project

The SWP is the nation's largest state-built water conveyance system, which includes reservoirs, lakes, and storage tanks; canals, tunnels and pipelines; and pumping and power plants. The system is owned and operated by DWR and conveys water to 29 contractors, including SBVMWD and SGPWA. The East Branch Extension Phase II would not affect DWR operations regarding the Delta since the SWP would continue to be operated within the regulatory requirements. The new capacity provided by the East Branch Extension Phase II would enable SGPWA to receive more of its Table A allocation. However, the amount of water actually received by SGPWA and SBVMWD would continue to be determined by the annual Table A percentages calculated by DWR in compliance with the long-term contracts and the Monterey Agreement (see Section 1.5 Project Background).

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) provides the basis for water quality regulation within California. This act established the authority of the SWRCB and the nine RWQCBs. The SWRCB administers water rights, water pollution control, and water quality functions throughout the state, while the RWQCBs conduct planning, permitting, and enforcement activities. The project area lies within the jurisdiction of the SARWQCB.

Regional Water Quality Control Plans

The SWRCB and the RWQCB share the responsibility, under the Porter-Cologne Act, to formulate and adopt water policies and plans and to adopt and implement measures to fulfill CWA requirements. The RWQCB has prepared the Santa Ana River Basin Water Quality Control Plan (1995) that establishes beneficial water uses to be protected, water quality objectives needed to protect designated beneficial uses, and implementation programs to meet the stated objectives. The applicable beneficial uses of the nearest downstream water-body to the project area is provided in **Table 3.7-1**. **Table 3.7-2** defines the identified beneficial uses.

General Construction Permit

Construction activities of one acre or more are subject to the permitting requirements of the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit). The project applicant must submit a Notice of Intent to the RWQCB to be covered by the General Permit prior to the beginning of construction. The General Construction Permit requires the preparation and implementation of a SWPPP. The SWPPP must be prepared before project construction begins and must include specifications for BMPs that would be implemented during construction.

**TABLE 3.7-1
BENEFICIAL USE DESIGNATIONS FOR WATER BODIES IN THE PROJECT AREA**

Waterbody	MUN	AGR	GWR	COLD	RARE	WARM	WILD	REC-1	REC-2
Santa Ana River Reach 5 (San Jacinto Fault in San Bernardino to Seven Oaks Dam ⁺)	X	X	X		X	X	X	X	X
Mill Creek Reach 1 (segment between the confluence with the Santa Ana River to the Bridge Crossing on Route 38 at Upper Powerhouse)	I	I	I	I	I		I	I	I

X = Present or potential beneficial uses
I = Intermediate beneficial uses

SOURCE: SARWQCB Basin Plan, 1995

**TABLE 3.7-2
DEFINITIONS OF BENEFICIAL USES OF SURFACE WATERS**

Beneficial Use	Description
Agricultural Supply (AGR)	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
Municipal and Domestic Supply (MUN)	Waters are used for community, military, municipal or individual water supply systems. These uses may include, but are not limited to, drinking water supply.
Groundwater Recharge (GWR)	Uses of water for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting saltwater intrusion into freshwater aquifers.
Cold Freshwater Habitat (COLD)	Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Preservation of Rare and Endangered Species (RARE)	Uses of waters that support habitats necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened, or endangered.
Warm Freshwater Habitat (WARM)	Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Wildlife Habitat (WILD)	Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
Water Contact Recreation (REC 1)	Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white-water activities, fishing, or use of natural hot springs.
Non-Contact Water Recreation (REC 2)	Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

SOURCE: SARWQCB Basin Plan, 1995

BMPs are measures undertaken to control degradation of surface water by preventing soil erosion or the discharge of pollutants from the construction area. Additionally, the SWPPP must describe measures to prevent or control post-construction runoff and identify procedures for inspecting, maintaining, and monitoring BMP facilities or other project elements. Required elements of a SWPPP include:

- Site description addressing the elements and characteristics specific to the site,
- Descriptions of BMPs for erosion and sediment controls,
- BMPs for construction waste handling and disposal,
- Proposed post-construction controls, and
- Procedures for monitoring BMP performance.

Streambed Alteration Agreements

Sections 1601-1616 of the California Fish and Game Code apply to any state or local government agency or any public utility that proposes to *substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.*

Sections 1601-1616 require application to the CDFG to obtain a Streambed Alteration Agreement (SAA). This agreement is not considered a discretionary permit subject to CEQA; instead, it is a negotiated agreement between DFG and the applicant. The agreement may contain mitigation measures, such as erosion control, intended to reduce the effect of the activity on fish and wildlife resources. The agreement may also be provisional and include a long-term monitoring condition to assess the effectiveness of the proposed mitigation(s) related to the activity.

The proposed project would require a streambed alteration agreement with the CDFG for the construction activities that would take place within the Santa Ana River.

3.7.1.3 Local

San Bernardino County Storm Water Permit

Section 402 of the CWA requires that municipalities of a certain size be covered under Municipal Separate Storm Sewer System (MS4) discharge permits. The Santa Ana RWQCB issued NPDES Permit No. CAS618036, Order No. R8-2002-0012 in April 2002 to San Bernardino County Flood Control District, the County of San Bernardino, and the Unincorporated Cities of the County within the Santa Ana watershed to regulate urban storm water runoff in the region and identifies measures to reduce pollution in storm water runoff. Runoff in the project area is subject to this NPDES permit.

The storm water discharge permit requires that the permittees prepare a Water Quality Management Plan (WQMP) to develop and implement programs and policies to minimize the effects of urbanization on local hydrology, urban runoff flow rates or velocities, and pollutant loads. The

WQMP includes BMPs for source control, pollution prevention, and/or structural treatment BMPs. For all structural treatment controls, the WQMP identifies the responsible party for maintenance of the treatment systems, and a funding source or sources for its operation and maintenance.

3.7.2 Environmental Setting

3.7.2.1 Regional Setting

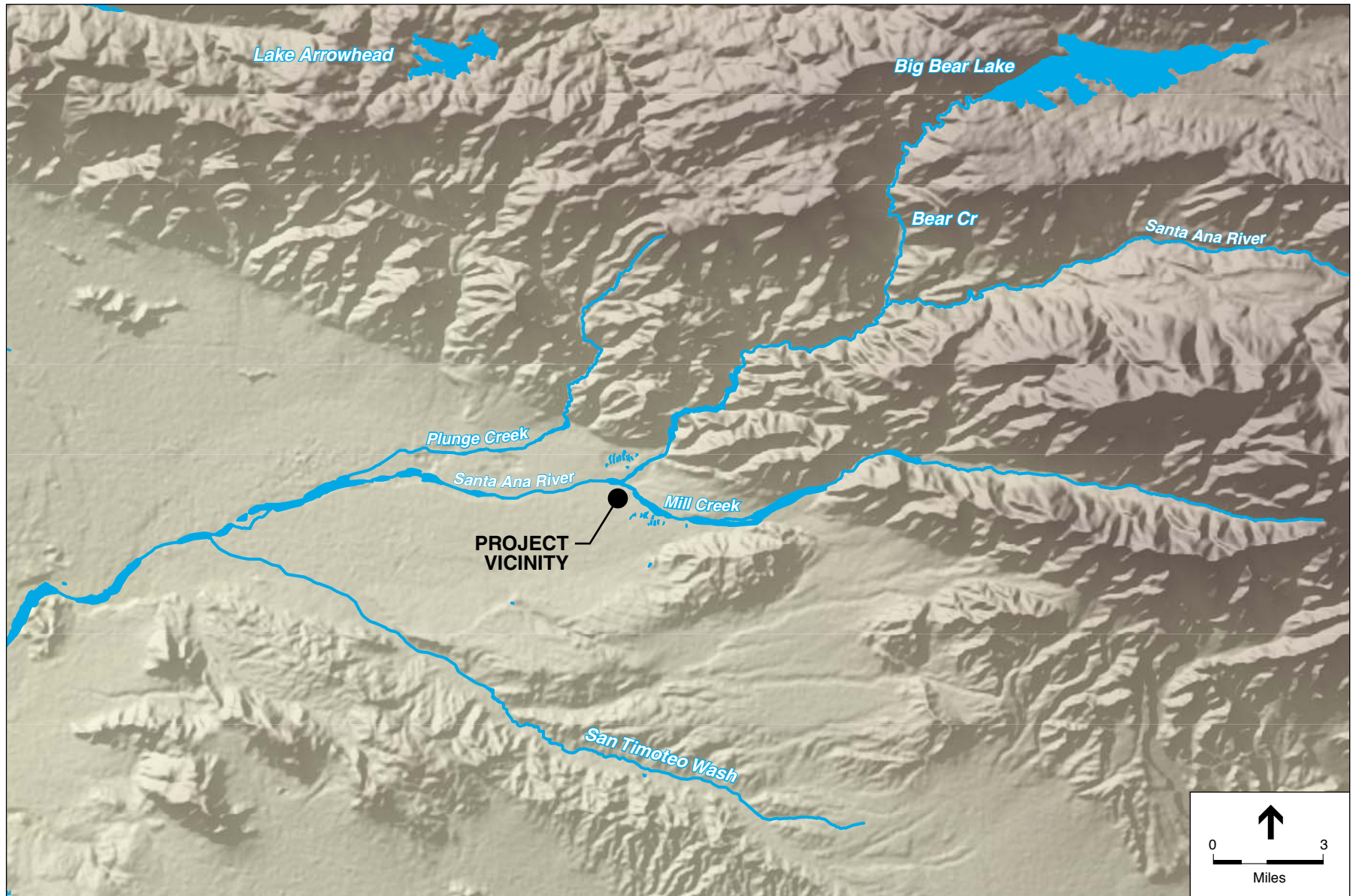
The climate in the project area is Mediterranean with hot and dry summers and mild, wet winters. The average annual rainfall in the region ranges from 13 to 16 inches, and most of it occurs between November and March. The project area is located within the Santa Ana River watershed, which is the largest coastal watershed in Southern California. The main stem of the Santa Ana River flows from the San Bernardino Mountains to the Pacific Ocean. The project area lies in the upper watershed at the foot of the San Bernardino Mountains approximately 5.2 miles downstream from the Seven Oaks Dam near the confluence of the Santa Ana River and Mill Creek. **Figure 3.7-1** identifies major surface water resources in the region.

The Seven Oaks Dam was completed in 1999 by the USACE to provide flood protection on the main stem of the river, which flows down into the Chino and Riverside Groundwater Basins. The local sponsors of the dam include the San Bernardino County Flood Control District (SBCFCD), the Riverside County Flood Control District, and the Orange County Flood Control District. The SBCFCD owns and maintains the flood control facilities in San Bernardino County. The dam substantially altered the flood plain of the Santa Ana River. **Figure 3.7-2** shows the recent FEMA 100-year flood plan near the project site. The flood zone has diminished substantially since the dam was constructed upstream. However, Mill Creek is an uncontrolled stream. Most of the project is located outside of the 100-year flood plain, except where the pipeline crosses the Santa Ana River.

The Santa Ana River and Mill Creek experience heavy flows in the winter time, responding to storm events. Historically, both streams have had perennial flow through most of the summer as recorded by the USGS at the Mentone stream gage located near the proposed project location. The SBVWCD diverts Mill Creek and Santa Ana River water from the stream channels to percolation ponds to augment local groundwater supplies.

The SBCFCD has constructed a flood control levee along Mill Creek extending from upstream of Crafton Hills Pump station to the Santa Ana River. There are two locations through which the SBVWCD diverts stream flows to the percolation ponds. The levees were reinforced with 10-foot tall vertical concrete flood protection wall. The wall was designed and constructed by the USACE.

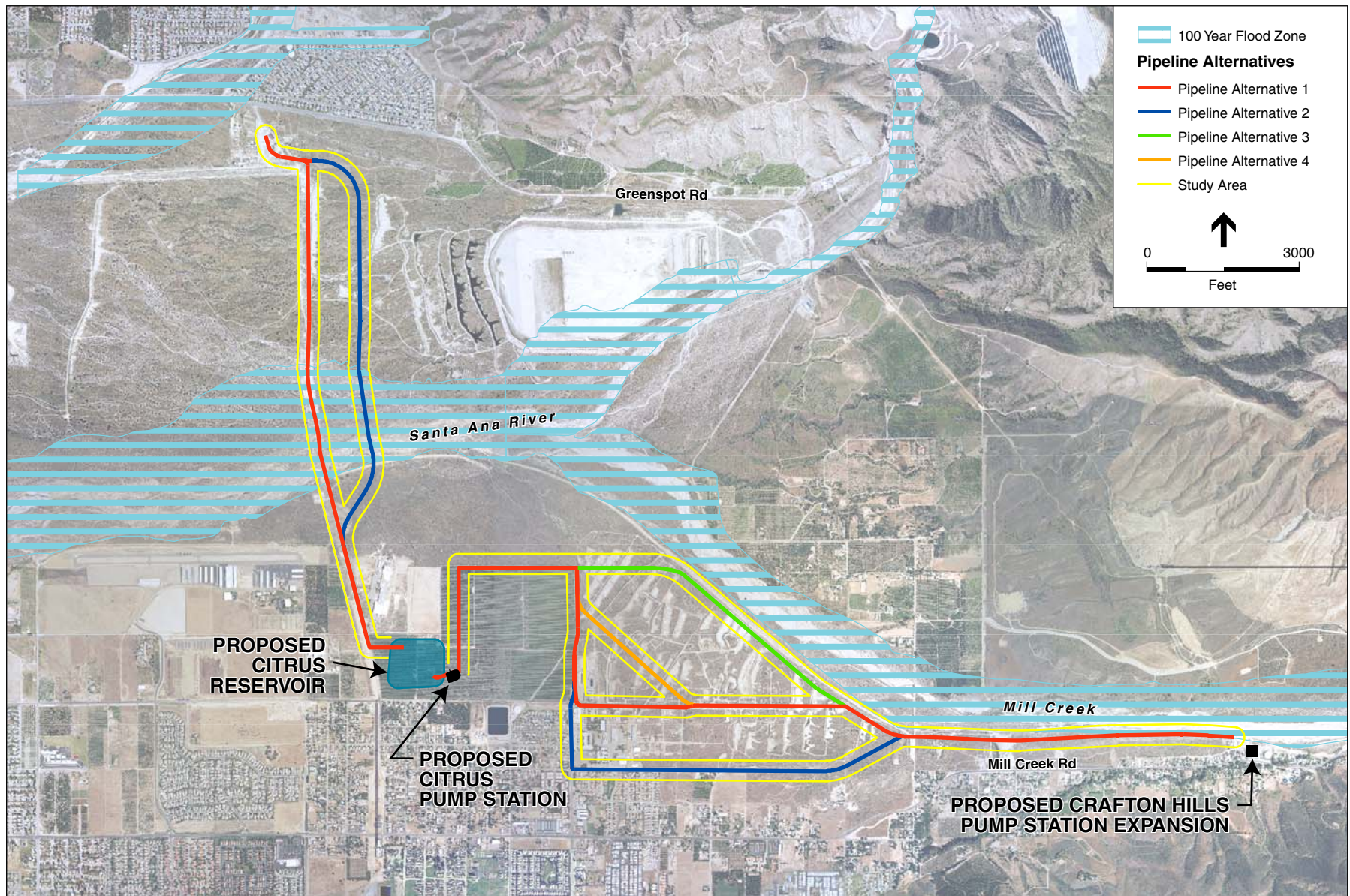
The Bunker Hill Groundwater Basin underlies the San Bernardino area. Groundwater recharged by Mill Creek and the Santa Ana River provides a substantial portion of the potable water supplies in the Inland Empire.



SOURCE: USGS; ESA, 2007.

DWR - East Branch Extension . 206008.01

Figure 3.7-1
Major Surface Water Resources



SOURCE: FEMA, 2007; GlobeXplorer, 2007; ESA, 2008.

DWR - East Branch Extension . 206008.01

Figure 3.7-2
100 Year Flood Zone

3.7.2.2 Project Area Setting

Surface Water

The project area is located near the confluence of the Santa Ana River and Mill Creek. The proposed pipeline would cross the Santa Ana River, potentially requiring trench dewatering and surface flow diversion. The pipeline would run adjacent to Mill Creek terminating at the existing Crafton Hills Pump Station. The topography slopes westward from approximately 2,280 feet amsl at Crafton Hills Pump Station to approximately 1,530 feet amsl at the Foothill Pipeline.

The northern pipeline segments would cross the historical Santa Ana River floodplain. Much of this area has been removed from the 100-year floodplain since the construction of Seven Oaks Dam. The broad open space area is contoured with small drainages that drain rainfall in the area westward toward the river's confluence with Plunge Creek approximately four miles west of the project area. This undeveloped area has been contoured in the past to detain peak river flows for percolation and is currently a mix of granite boulder-lined percolation basins and natural drainages.

The main channel of the Santa Ana River wash is approximately 1,200 feet wide near the proposed project crossing. The southern border of the channel is defined by a cut bank that rises approximately 15 feet from the riverbed near the proposed crossing. Construction would require diverting any flow in the river around the construction zone and back into the channel downstream. The diversion may be required for up to twelve weeks. During the trenching, fill would be placed in the river requiring a permit from the USACE, pursuant to Section 404 of the CWA.

The plateau to the south of the bank is outside of the 100-year floodplain, as shown in Figure 3.7-2 above. Several drainages flow toward the main channel of the river in this area. East of Crafton Avenue, the SBVWCD has constructed percolation ponds that detain Mill Creek flows.

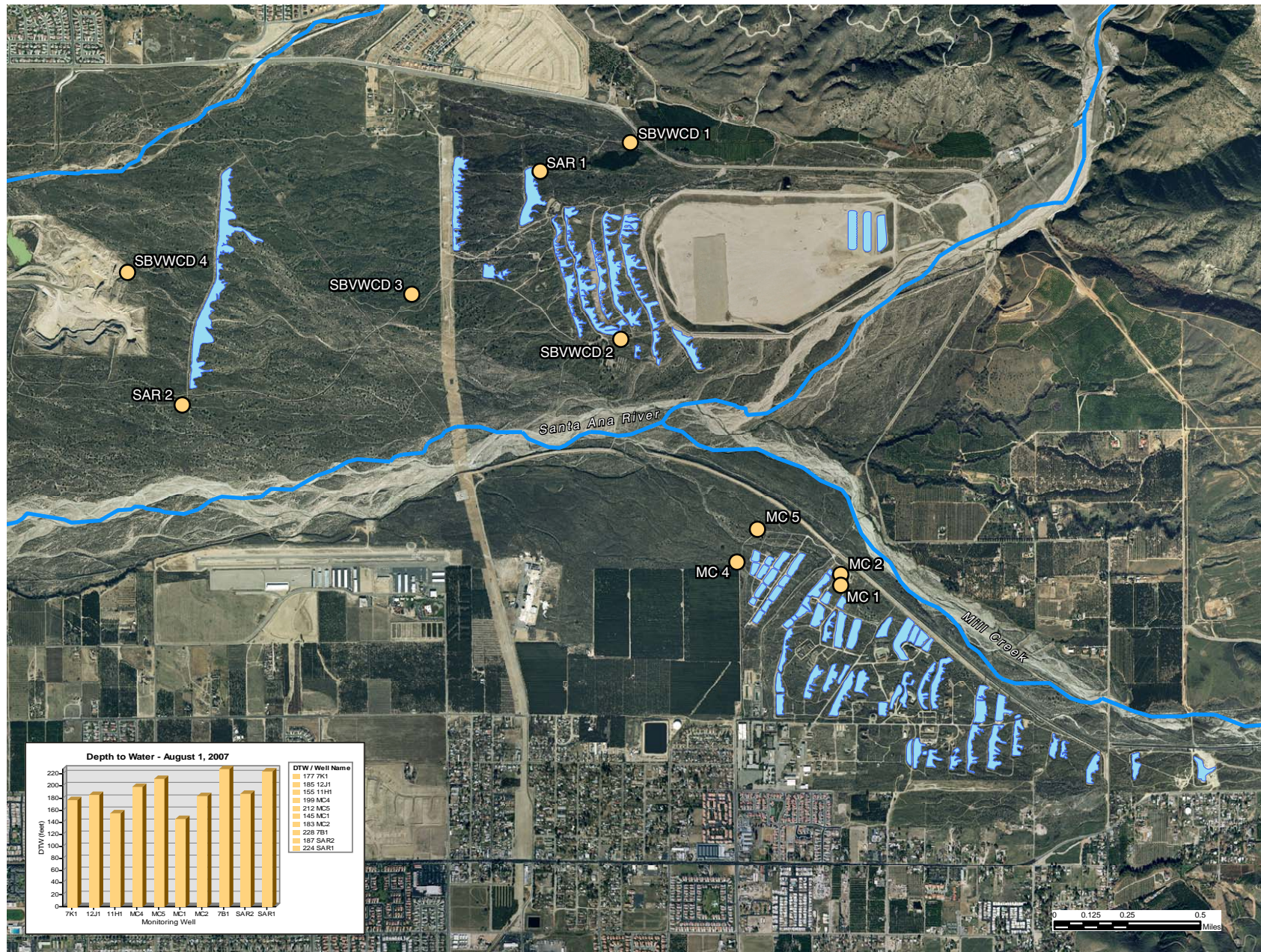
Figure 3.7-3 shows the location of the SBVWCD percolation ponds, monitoring wells, and some recent depth to groundwater measurements. SBVWCD diverts water from the creek upstream near the Crafton Hills Pump Station and conveys it to several percolation facilities in the Mentone area.

Marsh-like habitats occur in portions of the proposed alternative alignments. Detailed delineation of wetlands is included in Section 3.3, Biological Resources.

Water Quality

Total Maximum Daily Load

Section 303(d) of the CWA requires that each state identify water bodies or segments of water bodies that are "impaired" (i.e., do not meet one or more of the water quality standards established by the state). These waters are identified in the Section 303(d) list as waters that are polluted and need further attention to support their beneficial uses. Once the water body or segment is listed, the state is required to establish Total Maximum Daily Load (TMDL) for the pollutant. A TMDL is the maximum amount of a pollutant that a water body can receive and still meet the water quality standards. Typically, TMDL is the sum of the allowable loads of a single



SOURCE: SBVWCD, 2007.

DWR - East Branch Extension . 206008.01

Figure 3.7-3
Percolation Ponds and
Monitoring Wells with
2007 Depth to Water Data

pollutant from all contributing point and nonpoint sources. The segment of Mill Creek in the project area is listed on the 303(d) list as impaired for pathogens (RWQCB, 2006).

Groundwater

The project area lies partly in the Bunker Hill Groundwater Basin. Depth to groundwater in the project area ranges seasonally from 120 to 200 feet below ground surface (SBVWCD, 2007a). The SBVWCD owns and maintains much of the percolation ponds traversed by the proposed pipelines that are used to augment groundwater supplies with seasonal runoff. The SBVWCD holds water diversion rights for Mill Creek and Santa Ana River water, which it diverts for groundwater recharge.

Groundwater quality in the Redlands area has been affected by overlying land uses over the years. As discussed in Section 3.6, the SARWQCB has confirmed the presence of DBCP (dibromochloropropane) in trace amounts in the groundwater in the city's pumping areas. This chemical was applied to citrus groves until banned by the USEPA in 1979. In addition, property owned by Lockheed Propulsion Company near the current SBVWCD percolation ponds east of Crafton Avenue has been found to contain contamination in soils and groundwater. The City of Redlands shut down wells west of the site due to the presence of organic chemicals. Monitoring wells located on the site (Figure 3.7-3) have found small amounts of contamination remaining in the soils. However, most of the contamination resulting from the historical overlying land use has either moved down gradient or has dissipated. (Refer to Section 3.6, Hazards and Hazardous Materials for details).

3.7.3 Impact Assessment

The proposed project's potential impacts were assessed using the *CEQA Guidelines* Appendix G Checklist as well as with provisions of the San Bernardino County General Plan. The following sections discuss the key issue areas identified in the *CEQA Guidelines* and the County General Plan with respect to the project's potential effect on hydrology and water quality. Significance thresholds are identified and a significance conclusion is made following the discussion.

3.7.3.1 Water Quality

This section discusses the following CEQA Checklist questions:

Would the project violate any water quality standards or waste discharge requirements?

Would the project substantially degrade water quality?

Additionally, this section discusses the following San Bernardino General Plan provisions:

Would the project have potential for discharge of storm water pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work areas?

Would the project have potential for discharge of storm water to affect the beneficial uses of the receiving waters?

Significance Threshold

The proposed project would result in a significant impact if the project resulted in discharge of sediments or pollutants that would violate any water quality standard, degrade the water quality, or affect the beneficial uses of the receiving water.

Impact Analysis

Construction Runoff

Construction of the proposed pipelines, reservoir and pump station and expansions would involve earthmoving activities such as excavation, grading, soil stockpiling, and filling. Pipeline installation would occur through trenching at up to 50 feet below ground surface. Construction activities could result in soil erosion and subsequent discharge of sediment to adjacent surface water or drainages (i.e., Santa Ana River and Mill Creek). Sedimentation to the waterways could degrade water quality and adversely affect identified beneficial uses. Construction activities would also involve use and handling of chemicals such as oil and fuel. In the event of accidental release of such chemicals, such as spills during fueling of equipment or vehicles, the chemical could come into contact with storm or washwater runoff flowing into the nearby water bodies, thus affecting water quality. DWR would be required to obtain coverage under the General Construction Permit and prepare a SWPPP. Incorporation of specific BMPs (Mitigation Measure HYDRO-1) to control erosion, sedimentation, and hazardous materials release would minimize the impact to a less-than-significant level.

River Diversion and Trench Dewatering

Installation of the pipeline across the Santa Ana River may require diverting river flows for the duration of construction in the active river channel (approximately 12 weeks). Trenching across the active river channel would be conducted during the summer months due to the flashy nature of the stream in winter months and the difficulties of controlling a diversion during a peak flow event. During late summer, the river may be totally dry during the trenching activities across the channel. Diverting the river would require a permit from the USACE pursuant to Section 404 of the CWA (since it would entail placing fill in the river bed), a Streambed Alteration Agreement from CDFG (Section 1602), and a Section 401 water quality certification from the RWQCB.

The construction across the active river channel and river wash would be phased. It is estimated that 80 linear feet of pipeline could be installed each day to a depth of up to 50 feet. As the trenching progresses across the active river channel, a pattern of excavating, dewatering, pipe installation, and backfill would progress across the river wash.

The methods used to divert the river could increase the velocity of the flow and increase turbidity. Downstream water quality could be adversely affected by increased turbidity. Measures to reduce velocity could include providing a detention basin with discharge control features. Turbidity in the river is variable and is greatly influenced by precipitation events and water quality behind

Seven Oaks Dam. The turbidity would decrease once the diversion system stabilized. Following installation of the pipeline, the riverbed would be re-contoured to its original condition to avoid scouring potential. Water quality would not be affected once construction is complete. Mitigation Measures HYDRO-2 and 3 would minimize water quality impacts from trench dewatering and river diversion.

During trenching in the river wash at depths up to 50 feet bgs, groundwater would likely be encountered as the water table may be higher in the river wash area. This water would be dewatered from the trench during the construction activities. The water would be discharged back into the river channel downstream of the construction activities. The amount of water to be discharged would vary depending on the time of year, water-year type (wet or dry), and the operations of the Seven Oaks Dam by the USACE. Dewatering would require a discharge permit from the RWQCB.

Elsewhere in the project area, including the proposed Citrus Reservoir location, it is not expected for groundwater to be encountered or dewatering to be required. The quarterly groundwater monitoring report for the former Lockheed Propulsion Site (Tetra Tech, 2007), shows that the Mentone Citrus Growers production well #2, which is located in the citrus orchard near the proposed Citrus Reservoir, has a depth to groundwater of about 180 feet. As such, groundwater is not expected to be encountered at the proposed reservoir site.

Groundwater Quality

SWP water would be used to augment groundwater supplies in the Beaumont Storage Unit. Recharging SWP into the local groundwater basin would alter the quality of the groundwater. TDS concentrations in SWP water average 200 to 300 mg/L (DWR, 2003). TDS levels in the Beaumont Storage Unit range from 185 – 337 milligrams per liter (mg/l) (USGS, 2006; Figure 32), which is similar to the existing water quality.

SWP water deliveries conveyed as part of the East Branch Extension Phase I are currently recharged into the Beaumont Storage Unit. The Supplemental EIR and subsequent Addenda prepared for the East Branch Extension Phase I project acknowledged that groundwater quality could be affected by recharge of SWP water. The EIR committed DWR and the SGPWA to develop and implement a groundwater monitoring and management plan for the Beaumont Basin. The principal parameters evaluated in the monitoring program include TDS, total organic carbon (TOC), and tri-halomethanes (THMs). The SGPWA currently conducts groundwater monitoring of the basin as stipulated by the Phase I EIR. The results of the monitoring have not shown adverse effects to groundwater quality attributable to recharge of SWP water (USGS, 2006).

The proposed project could increase recharge into the basin by as much as 8,650 afy. Given the quality of the groundwater and the existing recharge of SWP, the recharge of additional SWP water into the groundwater basin would not be expected to adversely affect groundwater quality or substantially alter existing groundwater quality conditions. Continued implementation of the monitoring and reporting program would enable the SGPWA to evaluate groundwater quality

once the additional recharge occurs. Impacts to groundwater quality would be less than significant.

Mitigation Measures

HYDRO-1: The required SWPPP shall at the least, include BMPs that facilitate site control, housekeeping, and site restoration components. The BMP's should be similar to those described in the California Storm Water Quality Association Storm Water Best Management Practice Handbook. At a minimum the following BMPs should be implemented:

- Stockpiled soils shall be controlled to prevent erosion from wind and runoff. Control measures may include covering, silt fences, straw bales, or construction of earthen swales.
- Vehicle and equipment fueling, equipment and fuel storage, and concrete wash activities shall be performed in controlled areas a minimum of 1,000 feet from surface water features with secondary containment and spill prevention equipment.
- Street sweeping shall be conducted on surface streets affected by construction and at construction site entrances and exits including during periods of soil hauling as necessary to prevent tracking soil onto streets.
- No vehicle or equipment wash water, including concrete wash water, will be allowed to run off the site. Controls will be implemented to detain wash water and remove waste from the site for appropriate disposal.
- No equipment shall be re-fueled within 1,000 feet of the main channel of the Santa Ana River.

HYDRO-2: DWR shall adopt the following measures for surface water diversion:

- Construction within the Santa Ana River channel requiring diversion of Santa Ana River water will occur in the non-rainy months (May-September).
- DWR shall coordinate with the USACE regarding releases from Seven Oaks Dam to minimize flow during the stream crossing construction.
- The active streambed shall be returned to its pre-construction width and elevation after the construction activities are complete.
- The diversion outfall location shall have velocity reduction features and armoring if necessary to prevent increased turbidity, scouring and erosion. These features should be designed similar to BMPs EC-10 and NS-5 described in California Stormwater Quality Association Stormwater Best Management Practice Handbook (January 2003). Sediment basins shall be used if necessary to minimize turbidity during diversions.

HYDRO-3: DWR shall require the excavation contractor to prepare a dewatering and diversion management plan outlining the dewatering system design, diversion system design, operation schedule, permit conditions of approval, and monitoring requirements. DWR shall review and approve the plan prior to its implementation.

Significance Conclusion

Less than significant with mitigation. Incorporation of specific BMPs (Mitigation Measure HYDRO-1) to control erosion, sedimentation, and hazardous materials release to the water would minimize erosion from construction to a less-than-significant level. Mitigation Measures HYDRO-2 and HYDRO-3 would minimize water quality impacts from trench dewatering and river diversion to a less-than-significant level.

3.7.3.2 Drainage and Flooding

This section discusses the following CEQA Checklist questions:

Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?

Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?

Would the project create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Would the project place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows?

Additionally, this section discusses the following San Bernardino General Plan provisions:

Would the project have potential for significant changes in the flow velocity or volume of storm water runoff to cause environmental harm?

Would the project have potential impact of project's post-construction activity on storm water runoff?

Would the project have the potential for significant increases in erosion of the project site or surrounding areas?

Significance Threshold

A significant impact would result if the project were to result in on or off site flooding, exceed storm drain infrastructure, place structures within a 100-year flood plain that would impede flood flows, and or result in increased storm water velocity which would cause erosion.

Impact Analysis

Drainage

Once installed, the pipeline would not significantly affect surface drainage because the pipeline would be below the surface, with the exception of minor appurtenant facilities such as blow-off valves and pipeline access vaults. These facilities would not result in increased on or off-site flooding or result in a significant change to the drainage pattern of the site. The Citrus Reservoir and Citrus Pump Station would develop approximately 35 acres of land currently supporting citrus groves. The additional impervious surfaces would slightly increase storm water runoff due to the impervious surfaces and compacted soils. The area is not improved with storm drains so the project would not cause existing storm drain infrastructure capacity to be exceeded. Storm water generated from the Citrus Pump Station would be allowed to infiltrate on site or be diverted to the reservoir. No storm water would be diverted from the site. Consistent with current operations, the expanded Crafton Hills Pump Station would direct storm water to areas where precipitation would percolate into the ground, as the pump station is surrounded by alluvial cobbles that have a high infiltration rate. The small increase in impervious surfaces would not result in a significant impact to the drainage pattern in the area.

Flood Plain

The proposed project does not include the construction of any residential components within a 100-year flood hazard area. There would be no impact relative to residential units. The proposed project does include the construction of underground water pipe that would be within the 100-year flood hazard area of both Mill Creek and the Santa Ana River, as mapped by FEMA. Because the pipe would be underground, no flood water would be impeded or redirected. There would be no structures built within the flood hazard area that could potentially impede or redirect flows. The project would not affect the local floodplain or increase risk of flooding in other areas. Impacts from flooding would be less than significant.

Santa Ana River Scour

Heavy storms, peak flood events, and riverbed alteration could promote excessive scouring of the Santa Ana River channel over the life of the project. The pipeline could be exposed if installed at insufficient depths. The Santa Ana River could change its appearance in future years as peak flood events recontour the river channel. Much of the peak flood potential in the area has been controlled by the installation of the Seven Oaks Dam. However, Mill Creek remains an uncontrolled river. Intense scouring can occur if the riverbed becomes more channelized or if development alters the river bottom elevation. Design of the pipeline would have to account for the potential scouring impact to prevent a catastrophic failure of the system. The pipeline installation depth under the river channel and the management of riverbed improvements by the

USACE and the SBCFCD would need to take into account the potential effect. The following mitigation measures would reduce impacts to a less-than-significant level.

Mitigation Measures

HYDRO-4: DWR shall design the Santa Ana River crossing to prevent eventual exposure by riverbed scouring. The pipeline shall be placed approximately 20 feet below possible scour depths and shall be encased in concrete under the active channel.

HYDRO-5: DWR shall request notification by USACE or SBCFCD of future riverbed modifications in the segment of the Santa Ana River from the East Branch Extension crossing to Plunge Creek. Riverbed modifications of concern include the removal and replacement of slope protection structures and riverbed armoring layers.

Significance Conclusion

Less than significant with mitigation. Impacts to storm drains would be less than significant because all post construction runoff within the pump station and reservoir facilities would be contained onsite. There would be no impact to storm drain infrastructure. No flooding on or off site would result from the project. Furthermore, with the implementation of Mitigation Measures HYDRO-4 and HYDRO-5, potential impacts on the proposed project from future river-scour would be less than significant.

3.7.3.3 Levee Failure

This section discusses the following CEQA Checklist question:

Would the project expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

Significance Threshold

A significant impact would result if the proposed reservoir would cause a threat to life or property damage in the event that water was released due to reservoir failure.

Impact Analysis

The Citrus Reservoir would be excavated below the existing ground surface elevation. A six-foot high embankment would be located around the perimeter of the reservoir. This embankment would essentially provide freeboard above the water surface elevation. The surface water elevation would generally be below the ground surface elevation so that water would not drain from the site resulting in an inundation hazard to nearby land uses. Flooding hazards associated with reservoir failure would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. Since the Citrus Reservoir would be constructed below grade and water would not be able leave the site, flooding hazards associated with reservoir failure would be less than significant.

3.7.3.4 Groundwater Depletion

This section discusses the following CEQA Checklist question:

Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

Significance Threshold

A significant impact would result if the proposed project were to use groundwater volumes that would cause a lowering of the groundwater table and result in a production rate reduction of existing groundwater wells. A significant impact would also result if the proposed project were to interfere with groundwater recharge by creating large impervious surface areas that would cause the groundwater table to be lowered by reduced recharge area.

Impact Analysis

Groundwater Depletion

The proposed project would not directly use any groundwater resources. No new wells or groundwater withdrawals from existing wells would be required to complete this project. The project would reduce water use by removing citrus trees from production. Furthermore, the project augments potable water supplies to the region, substantially reducing pressure on groundwater production. Much of the water is used to recharge groundwater basins in the SGPWA service area. This provides a substantial benefit to local groundwater basins.

Dewatering groundwater encountered during construction activities would not adversely affect groundwater resources as the water would be conveyed and discharged downstream of the construction site. The water would be discharged into the Santa Ana River wash where it would remain as surface water or percolate to the groundwater.

Groundwater Recharge

Constructing the proposed Citrus Reservoir would remove approximately 35 acres of citrus orchard. During precipitation events, the orchard area has facilitated infiltration and groundwater recharge, as no impervious surfaces are on site. The proposed reservoir would be lined with concrete to prevent seepage, reducing local recharge during precipitation events. However, even

with construction and design techniques intended to prevent seepage losses, some water would be lost and seepage would contribute to the groundwater. Removing the orchard and the associated potential groundwater recharge area would not result in a significant impact to the overall groundwater recharge potential of the basin. The groundwater basin is partially recharged by percolation basins that collect and detain runoff from local rivers, river water infiltration, the Santa Ana River wash, and other open space areas. Percolation of rainfall on the 35 acres provides minimal recharge to the basin due to the low rainfall totals and relative size of the basin. Overall, impacts to the recharge potential of the groundwater basin would be less than significant.

The underground pipeline would traverse existing percolation basins maintained by the San Bernardino Valley Water Conservation District. The pipeline would be designed to minimize interference with percolation. Impacts to the groundwater recharge capabilities would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. The proposed project would not directly use any groundwater resources and removal of the orchard and the associated potential groundwater recharge area would not result in a significant impact to the overall groundwater recharge potential of the basin.

3.7.3.5 Seiche, Tsunami, Mudflow

This section discusses the following CEQA Checklist question:

Would the project result in inundation by seiche, tsunami, or mudflow?

Significance Threshold

A significant impact would result if the project was located in an area where a seiche, tsunami, or mudflows could damage people or structures in the project area.

Impact Analysis

Tsunamis are waves caused by an underwater earthquake, landslide, or volcanic eruption. Since the project site is located inland, it could not experience a tsunami. A seiche is a rhythmic motion of water in a partially or completely landlocked water body caused by landslides, earthquake-induced ground acceleration, or ground offset. The approximate 21 acres of surface water and 560 acre foot capacity below grade would not be large enough to generate a seiche that could cause damage to people or structures. There are no identifiable landslide areas that could affect the project site. The proposed Citrus Reservoir and Citrus Pump Station range from about 1,640 feet

amsl on the west end to about 1,690 feet on the west end. This elevation change occurs over a distance of about 1,000 feet with a natural gradient of approximately five percent. Therefore, landslide induced mudflows are not expected to occur. Project impacts from seiches, tsunamis, or mudflows would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. The proposed project would not be located in an area where a seiche, tsunami, or mudflow could damage people or structures.

3.7.3.6 Mitigation Measure Summary Table

Table 3.7-3 presents the impacts and mitigation summary Hydrology and Water Quality.

**TABLE 3.7-3
IMPACTS AND MITIGATION SUMMARY**

Proposed Project Impact	Mitigation Measure	Impact after Significance
Water Quality: The proposed project would have a less-than-significant impact on local water quality with implementation of mitigation measures.	HYDRO-1, HYDRO-2, HYDRO-3	Less than significant
Drainage and Flooding: The proposed project would have a less-than-significant impact on flooding and the flood plain with implementation of mitigation measures.	HYDRO-4 and HYDRO-5	Less than significant
Levee Failure: The proposed project would have a less-than-significant impact from potential levee failure.	None required	Less than significant
Groundwater Depletion: The proposed project would have a less-than-significant impact on groundwater resources.	None required	Less than significant
Seiche, Tsunami, Mudflow: The proposed project would have a less-than-significant impact from seiche, tsunami, or mudflow threats.	None required	Less than significant

Intentionally left blank.

3.8 Land Use, Planning and Recreation

This section describes the existing land uses, agricultural resources, and recreational facilities in the vicinity of the proposed project and evaluates potential impacts associated with implementation of the proposed project. The section describes the regulations that govern land use, agriculture, and recreation in the project area, including zoning ordinances, general plan policies, and airport land use plans.

3.8.1 Regulatory Framework

3.8.1.1 Federal

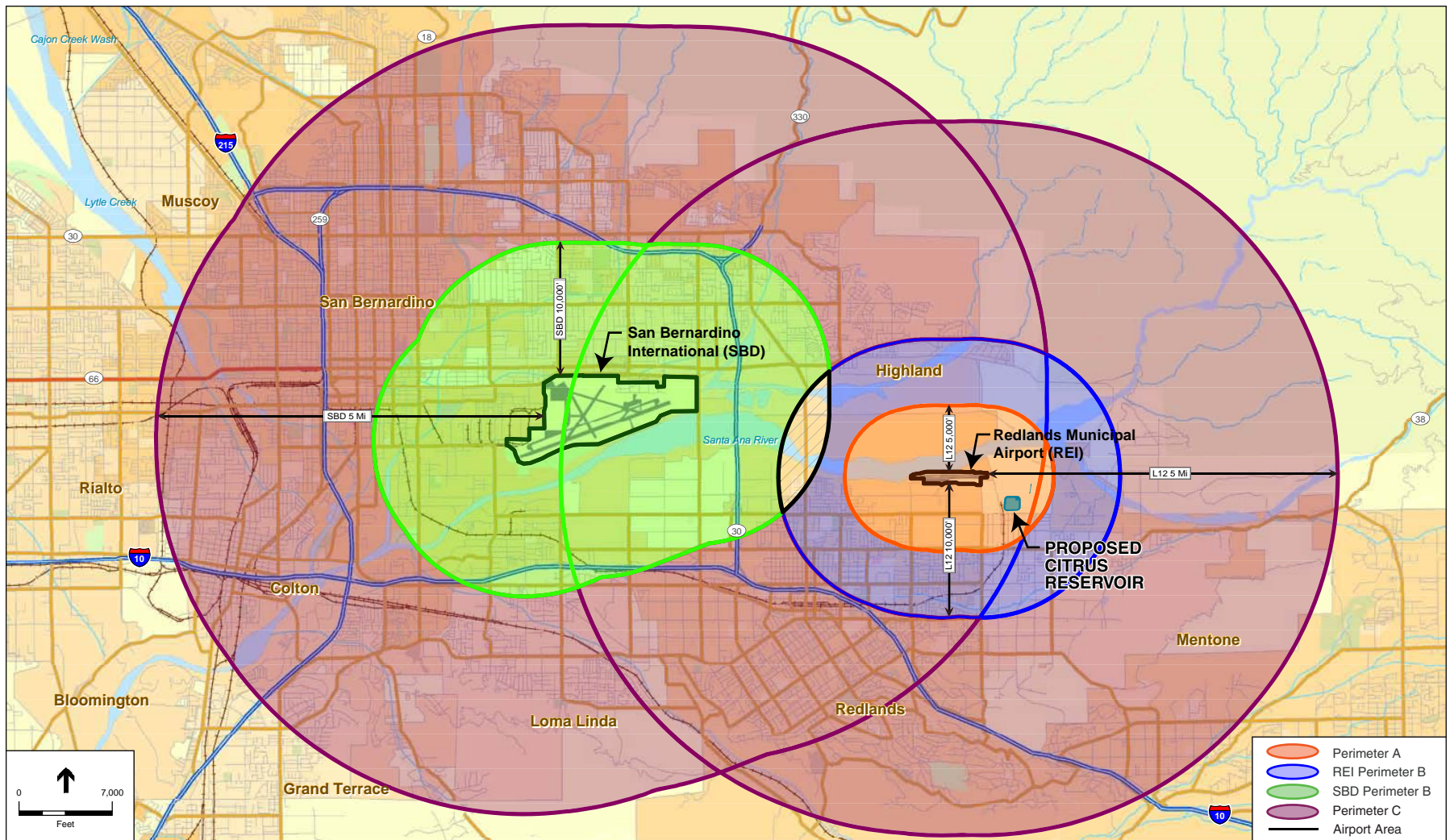
Federal Aviation Administration

The FAA is the branch of the U.S. Department of Transportation with regulatory responsibility for civil aviation. The FAA is responsible for establishing policies and regulations to ensure the safety of the traveling public. The FAA oversees publicly-owned airports that are open to the public or airports that receive federal funding (Rodriguez, 2006). FAA Advisory Circular 150/5200-33B addresses hazardous wildlife attractants on or near airports (FAA, 2007a). This Advisory Circular is intended to provide guidance on siting certain land uses that have the potential to attract potentially hazardous wildlife to a public-use airport or its vicinity. The FAA Advisory Circular recommends against “land use practices that attract or sustain populations of hazardous wildlife within the vicinity of airports or cause movement of hazardous wildlife onto, into, or across the approach or departure airspace, aircraft movement area, loading ramps, or aircraft parking area of airports.” The Advisory Circular recommends a separation distance of 5,000 feet between airports using piston-powered aircraft and any project or change in land use that could attract hazardous wildlife, such as open-air water storage facilities. For airports using turbine-powered aircraft, the FAA recommends a separation distance of 10,000 feet between an airport and a potential hazardous wildlife attractant. For projects that are located outside the 5,000/10,000-foot criteria but within five statute miles of the airport’s air operations area¹, the FAA may review development plans, proposed land-use changes, operational changes, or wetland mitigation plans to determine whether such changes in land use would create potential wildlife hazards to aircraft operations. **Figure 3.8-1** shows the location of the proposed project and FAA’s separation criteria associated with land uses that could attract hazardous wildlife.

Santa Ana River Wash Plan (Plan B)

The BLM and the SBVWCD are leading a multi-jurisdictional Land Management and Habitat Conservation Plan (Plan B) proposed for approximately 4,365 acres located in the upper Santa Ana River Wash area. The proposed plan provides for the coordination between State and federal agencies, local government, and private-property owners

¹ Any area of an airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved areas or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiways, or apron.



SOURCE: DWR; ESA, 2007.

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Figure 3.8-1
FAA Wildlife Hazard Separation

for accommodation of existing and anticipated future activities within the Santa Ana River Wash Planning Area. The planning area boundaries begin at the mouth of Santa Ana Canyon at Greenspot Road and extend westward for approximately six miles to Alabama Street. Greenspot Road generally forms the northern boundary of the project area and the south bluffs of the Santa Ana River generally form the southern boundary. The plan proposes the continuation of existing water conservation facilities; the creation of a habitat conservation area; the continuation of a flood management program; the continuation and, in some cases, the expansion of roadways and utilities; the continuation of existing trails and construction of new trails; expansion of two existing sand and gravel mining operations; and the proposed BLM land exchange. The proposed plan would include a land exchange of public land west and south of Greenspot Road and north of the Santa Ana River for offered lands of equal value owned by the SBVWCD. The plan amendment would amend the 1994 South Coast Resource Management Plan to reflect the proposed land exchange.

3.8.1.2 State

Caltrans Division of Aeronautics

The State Aeronautics Act, Public Utilities Code (PUC) section 21001 *et seq.*, provides the foundation for the Caltrans aviation policies. The Division of Aeronautics issues permits for and annually inspects public-use airports throughout the State, and provides grants and loans for safety, maintenance and capital improvement projects at airports (Caltrans, 2006b). To foster compatible land use around airports, the Division administers noise regulation and land use planning laws and encourages environmental mitigation measures to lessen noise, air pollution, and other impacts caused by aviation. The Division's System Planning group provides for the integration of aviation into transportation system planning on a regional, statewide, and national basis.

The State Aeronautics Act² requires local jurisdictions that operate public airports to establish Airport Land Use Commissions (ALUCs) or an equivalent designated body to protect the public health, safety, and welfare. The ALUC or equivalent is responsible for promoting the orderly expansion of airports and adoption of land use measures by local public agencies to minimize exposure to excessive noise and safety hazards near airports. Each ALUC or equivalent designated body is responsible for preparing and maintaining an Airport Land Use Compatibility Plan (ALUCP) that identifies compatible land uses near each public use airport within its jurisdiction. The ALUCP must provide policies for reviewing certain types of development that occur near airports. State law requires consistency between airport land use compatibility plans and any associated general plans. Caltrans is responsible for the review and approval of all ALUCPs within the State of California.

² The State ALUC law is contained in Public Utilities Code Article 3.5, State Aeronautics Act, Section 21661.5, Section 21670 *et seq.*, and Government Code Section 65302.3 *et seq.*

California Farmland Mapping and Monitoring Program

The California Department of Conservation, under the Division of Land Resource Protection, has established the Farmland Mapping and Monitoring Program (FMMP). The FMMP monitors the conversion of the state's farmland to and from agricultural use. The map series identifies eight classifications and uses a minimum mapping unit size of 10 acres. The FMMP also produces a biannual report on the amount of land converted from agricultural to non-agricultural use. The FMMP maintains an inventory of state agricultural land and updates its "Important Farmland Series Maps" every two-years (Department of Conservation, 2005a). Important farmlands are divided into the following five categories based on their suitability for agriculture.

- **Prime Farmland.** Prime Farmland is land with the best combination of physical and chemical characteristics able to sustain long-term production of agricultural crops. This land has produced irrigated crops at some time within the four-years prior to the mapping date.
- **Farmland of Statewide Importance.** Farmland of Statewide Importance is land that meets the criteria for Prime Farmland but with minor shortcomings such as greater slopes or lesser soil moisture capacity.
- **Unique Farmland.** Unique Farmland has even lesser quality soils and produces the state's leading agricultural crops. This land is usually irrigated but also includes non-irrigated orchards and vineyards.
- **Farmland of Local Importance.** Farmland of Local Importance is land that is important to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.
- **Grazing Land.** Grazing Land is land on which the existing vegetation is suited to the grazing of livestock.

Williamson Act

The California Land Conservation Act of 1965, also known as the Williamson Act, is designed to preserve agricultural and open space lands by discouraging their premature and unnecessary conversion to urban uses. Williamson Act contracts, also known as agricultural preserves, create an arrangement whereby private landowners contract with counties and cities to voluntarily restrict their land to agricultural and compatible open-space uses. The vehicle for these agreements is a rolling term 10 year contract.³ In return, restricted parcels are assessed for tax purposes at a rate consistent with their actual use, rather than potential market value. At the end of the 10 year contract, either the local government, or landowner, can initiate the nonrenewal process. A "notice of nonrenewal" starts a nine-year nonrenewal period. During the nonrenewal process, the annual tax assessment gradually increases. At the end of the nine-year nonrenewal period, the contract is terminated. Contracts renew automatically every year unless the nonrenewal process is initiated. Williamson Act contracts can be divided into the following

³ Information about the basic provisions of Williamson Act contracts can be found on the California Department of Conservation, Division of Land Resource Protection web site:
http://www.consrv.ca.gov/DLRP/lca/basic_contract_provisions/index.htm, accessed June 22, 2007.

categories: Prime Agricultural Land, Non-Prime Agricultural Land, Open Space Easement, Built up Land, and Agricultural Land in Non-Renewal.

The Williamson Act states that a board or council by resolution shall adopt rules governing the administration of agricultural preserves. The rules of each agricultural preserve specify the uses allowed. Generally, any commercial agricultural use will be permitted within any agricultural preserve. In addition, local governments may identify compatible uses permitted with a use permit.

3.8.1.3 Local

Redlands Municipal Airport Master Plan

The City of Redlands maintains the *Redlands Municipal Airport Master Plan* (Master Plan), which was funded and approved by the FAA. The Master Plan includes a comprehensive analysis of airport needs based on historical and forecasted operations and provides for the orderly development of airport facilities to meet those needs. The Master Plan presents a demand-based program that provides the City with the opportunity to develop specific projects and facilities as they are needed, and it includes a financial management and development program to assist in the implementation of the planned recommendations.

The Master Plan was last revised in 1993 and recommended facility development in three stages according to fiscal years (FYs):

- Stage I (FY 1993 to FY 1997), which recommends the construction of: drainage facilities, navigational aids, taxiways, and T-hangars.
- Stage II (FY 1998 to FY 2002), which recommends the construction of: additional taxiways, an expanded apron area, various types of hangars, a general aviation terminal building and associated parking, aboveground fuel storage, and the filling of the Runway Safety Area associated with Runway 8 to provide for a runway extension.
- Stage III (FY 2003 to 2015), which is more conceptual and includes the construction of: additional taxi lanes; various types of hangars; extending the Runway 26 by 650 feet (for a total runway length of approximately 5,150 feet) and the parallel taxiway; additional lighting; additional hangar areas; underground fuel storage; the acquisition of property or navigation easements to accommodate the relocated runway protection zones (RPZs) at the end of the extended runways; pavement overlay; and the realignment of Opal Road to accommodate the RPZ associated with the proposed runway extension. (Master Plan Alternative 1 was identified as the preferred alternative.)

As shown in the Master Plan, the airport includes one 4,502-foot-long, 75-foot-wide runway, an administration/terminal building, various hangars, a fuel island, and navigational aids.

Redlands Municipal Airport Layout Plan

To ensure that airport facilities and land use are compatible with safe operations, FAA requires airport operators to maintain an Airport Layout Plan (ALP). The ALP depicts existing and

proposed airport facilities and serves as the foundation for Master Plans and Airport Land Use Compatibility Plans. FAA must review and approve all proposed facilities and development before they are included on the ALP to ensure that they are consistent with airport operations and safety. FAA approval of an ALP constitutes a federal action.

Although an operator should revise its Master Plan periodically to reflect changing operations and facility needs, it is not required to do so every time the ALP is revised. The ALP for Redlands Municipal Airport (REI) was revised in December 2005, and reflects both existing and proposed conditions. According the most recent version of the ALP, the City plans to extend Runway 8-26 by approximately 800 feet sometime during the next 20 years. During the first phase of the runway expansion the City would extend the east end of the runway by 200 feet and the west end of the runway by 350 feet to the west to provide for a 550-foot extension. Runway safety areas, object free areas, and runway safety zones would be expanded and shifted to accommodate the new runway dimensions. It is important to note that the most recent version of the ALP was developed after the Master Plan was adopted, but it remains consistent with the Master Plan's overall goals.

Redlands Municipal Airport Land Use Compatibility Plan

As discussed previously, the State Aeronautics Act of the California Public Utilities Code establishes statewide requirements for airport land use compatibility planning and requires nearly every county to create an ALUC or alternative designated body to implement these requirements. Rather than establishing a County-wide ALUC, San Bernardino County chose to delegate the responsibility for ALUCP preparation and implementation to each airport operator. The City of Redlands Municipal Utilities Department oversees the operation and administration of the airport and the Master Plan. The City's Airport Advisory Board reviews and makes recommendations pertaining to airport administration, management and operation.

An ALUCP provides for the orderly growth of an airport and the area surrounding the airport, excluding existing land uses. Its primary function is to safeguard the general welfare of people and property within the airport vicinity and the public in general. The *Redlands Municipal Airport Land Use Compatibility Plan* was revised in May 2003. The ALUCP serves as a standalone document that defines the procedures and criteria through which the City can address, evaluate, and review airport compatibility issues in the airport vicinity.

The ALUCP identifies an Airport Influence Area (AIA). The AIA is a geographic area that could be affected by present or forecasted aircraft operations, and an area in which new land uses or changes in land uses could cause adverse effects to flight operations and safety. Proposals for development within AIA, as defined by the adopted ALUCP, are reviewed for their consistency with ALUCP compatibility criteria. The goal of the ALUCP is twofold: To protect the public from the adverse affects of aviation, and to protect air travelers from land uses that could present unsafe conditions. The ALCUP provides specific policies and procedures for proposed changes in land use within the AIA to ensure compliance with four types of compatibility concerns:

- Exposure to aircraft noise;

- Land use safety with respect to both people and property on the ground and the occupants of aircraft;
- Protection of airport airspace; and
- General concerns related to aircraft overflights.

Adopted ALUCP (May 2003)

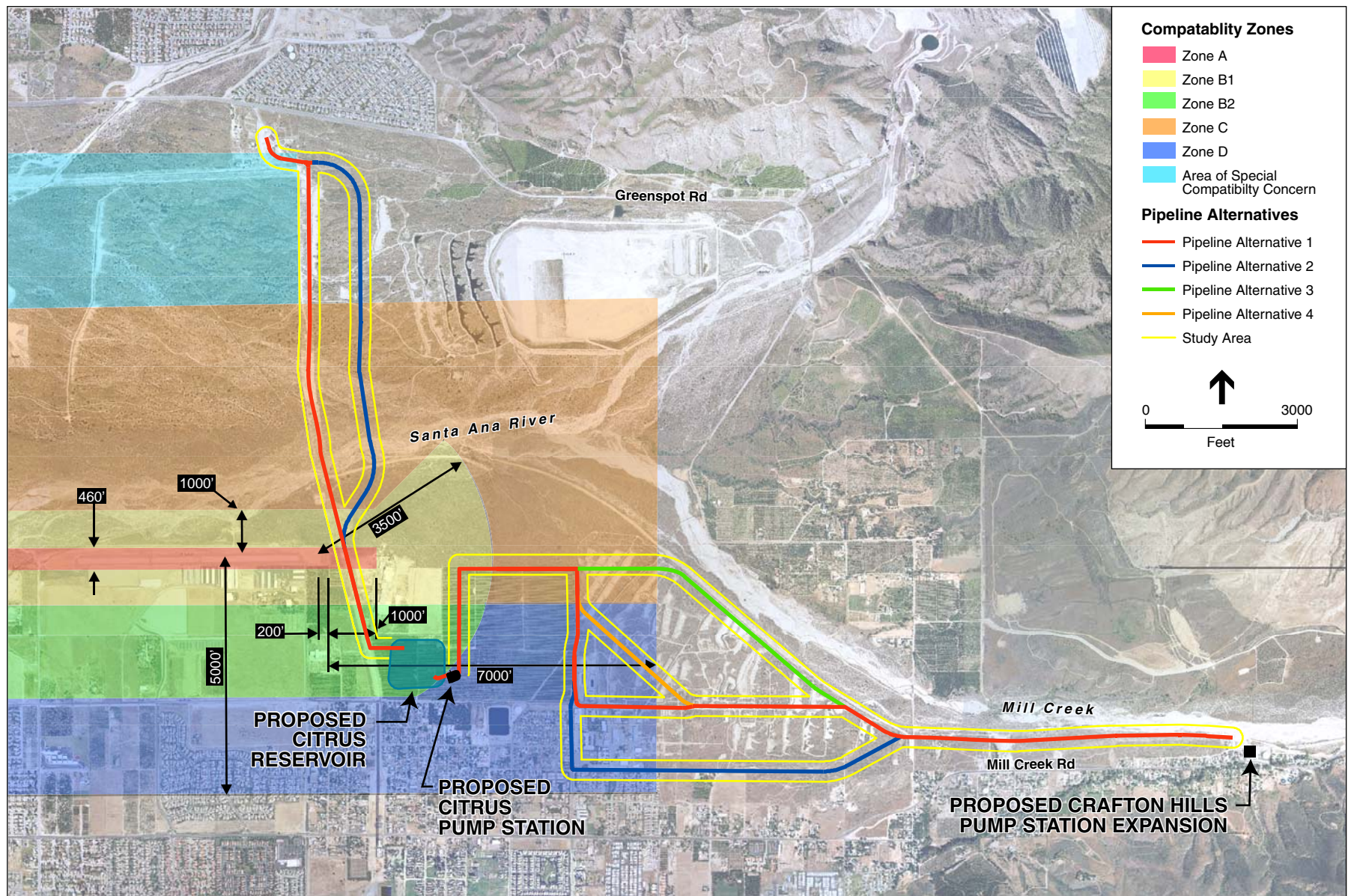
The ALUCP was last revised and adopted in May 2003. The AIA identified in the ALUCP includes a large portion of the City of Redlands and portions of unincorporated San Bernardino County. The southern portion of the City of Highlands is included as an area of “special compatibility concern”, but this area is outside of the AIA.

To address specific compatibility concerns, the AIA is composed of five compatibility zones that vary according to their distance from airport facilities and operations: Zones A, B1, B2, C and D. **Figure 3.8-2** presents the location of the proposed project components within the various compatibility zones defined in the currently adopted ALUCP. **Table 3.8-1** describes each zone, allowable and prohibited land uses, recommended population densities, and the project components that would be constructed within each zone. The State Aeronautics Act requires applicable general plans and specific plans to be consistent with ALUCPs. The ALUCP is intended to serve as an overlay zone to supplement the criteria established for individual land use designations under the City of Redlands and the County of San Bernardino general plans and zoning ordinances.

By ensuring that general plans and ALUCPs are consistent, not all projects require additional review for airport compatibility. However, certain types of major public or private developments have the potential to significantly affect the airport. Pursuant to ALUCP policies 1.5.1 and 1.5.2, the appropriate jurisdiction with authority over approval of a development proposal (the City or County) “shall specifically review major capital improvements (e.g., water, sewer, or roads) which would promote urban uses in undeveloped or agricultural areas” (City of Redlands 2003). As such, the proposed project is subject to local review for consistency with the ALUCP.

While all policies and procedures set forth in the ALUCP will apply, compatibility Criteria associated with policies 3.3, “Airspace protection” and 3.5, “Other Flight Hazards” are most pertinent because they address height limits, appropriate aviation easements, and specific land uses that can produce hazards to aircraft, such as uses that may be sources of dust, electrical interference, or wildlife attractions. Several other policies, such as Policies 1.83.(b) and 1.8.4(b) require that the City of Redlands be notified of any proposal for the construction or alteration of objects located within 20,000 feet of the runway and would require notice to the FAA in accordance with FAR Part 77, “Objects Affecting Navigable Airspace.”

Figure 3.8-3 is a representation of the adjusted safety zones based on the current air traffic volume, approach, and take off patterns; these safety zones have the same restrictions as those in Figure 3.8-2. While Figure 3.8-3 does not represent the adopted ALUP safety zones, this figure represents the existing conditions based on current flight patterns. Actual flight patterns have changed since the adoption of the most recent ALUCP safety zone. Once the ALCUP is updated, the new safety zone map will be similar to this figure.



SOURCE: GlobeXplorer 2007; City of Redlands, 2003; ESA 2008.

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Figure 3.8-2
Airport Land Use Compatibility Zones

**TABLE 3.8-1
SUMMARY OF COMPATIBILITY ZONES AND COMPATIBILITY CRITERIA
REDLANDS MUNICIPAL AIRPORT ALUCP (ADOPTED 2003)**

Zone	Location/Description	Maximum Density	Prohibited Uses	Comments
A	Runway Protection Zone or within Building Restriction Line adjacent to runway edges. Area extends 1,000 feet from runway end. High risk associated with low altitude of aircraft and high noise levels.	Residential: None Other Uses: 10 persons/acre Open Land Required: All remaining	<ul style="list-style-type: none"> All structures (unless set by aeronautical function) Assemblages of people Objects exceeding FAR Part 77 requirements Aboveground bulk storage of hazardous material Hazards to flight (physical, visual, electronic interference, etc.) Dedication of aviation easements 	The portion of the proposed pipeline adjacent to Opal Road would traverse Compatibility Zone A, regardless of alternative alignment selected (see Figure 3.8-2).
B1	Approach/Departure Zone and Adjacent to Runway Area extends as a 3,500-foot arc from the end of the runway, between the San Bernardino County Line to the north and San Bernardino Avenue to the south. Substantial risk, as aircraft are often less than 400 feet AGL.	Residential: 0.1 du/ac (1 du/10 acres) Other uses: 60/persons/acre Open Land Required: 30%	<ul style="list-style-type: none"> Children's schools, day care, libraries Hospitals and nursing homes Highly noise-sensitive uses Aboveground bulk storage of hazardous materials Objects exceeding FAR Part 77 requirements Hazards to flight (physical, visual, electronic interference, etc.) Dedication of aviation easements 	A portion of the proposed pipeline would traverse Compatibility Zone B-1, regardless of alternative alignment selected (see Figure 3.8-2).
B2	Extended Approach Departure Zone Extends 5,000 feet south of Area A. Since relatively few departures are to the east, zone B2 does not extend to eastern end of the AIA. Moderate risk, aircraft often below 800 feet in elevation.	Residential: 0.5 du/ac (1 du/2 acres) Other uses: 90/persons/acre Open Land Required: 30%	<ul style="list-style-type: none"> Children's schools, day care, libraries Hospitals and nursing homes Highly noise-sensitive uses Aboveground bulk storage of hazardous materials Objects exceeding FAR Part 77 requirements Hazards to flight (physical, visual, electronic interference, etc.) Dedication of aviation easements 	<p>A portion of the proposed pipeline that extends south of the runway would traverse Compatibility Zone B-2, regardless of the alternative alignment selected.</p> <p>All of the proposed Citrus Reservoir would be constructed in Zone B-2.</p>
C	Common Traffic Pattern Extends from edge of Area B1 to a location 7,000 feet from the end of the runway. Limited risk; aircraft at or below 1,000 feet AGL. Frequent noise intrusion	Residential: 6 du/ac Other uses: 150/persons/acre Open Land Required: 15%	<ul style="list-style-type: none"> Children's schools, day care, libraries Hospitals and nursing homes Objects exceeding FAR Part 77 requirements Hazards to flight (physical, visual, electronic interference, etc.) Dedication of aviation easements 	Regardless of alternative alignment selected, an approximately 4,000-foot segment of the proposed pipeline would pass through Zone C, north of the airport.

TABLE 3.8-1 (Continued)
SUMMARY OF COMPATIBILITY ZONES AND COMPATIBILITY CRITERIA
REDLANDS MUNICIPAL AIRPORT ALUCP (ADOPTED 2003)

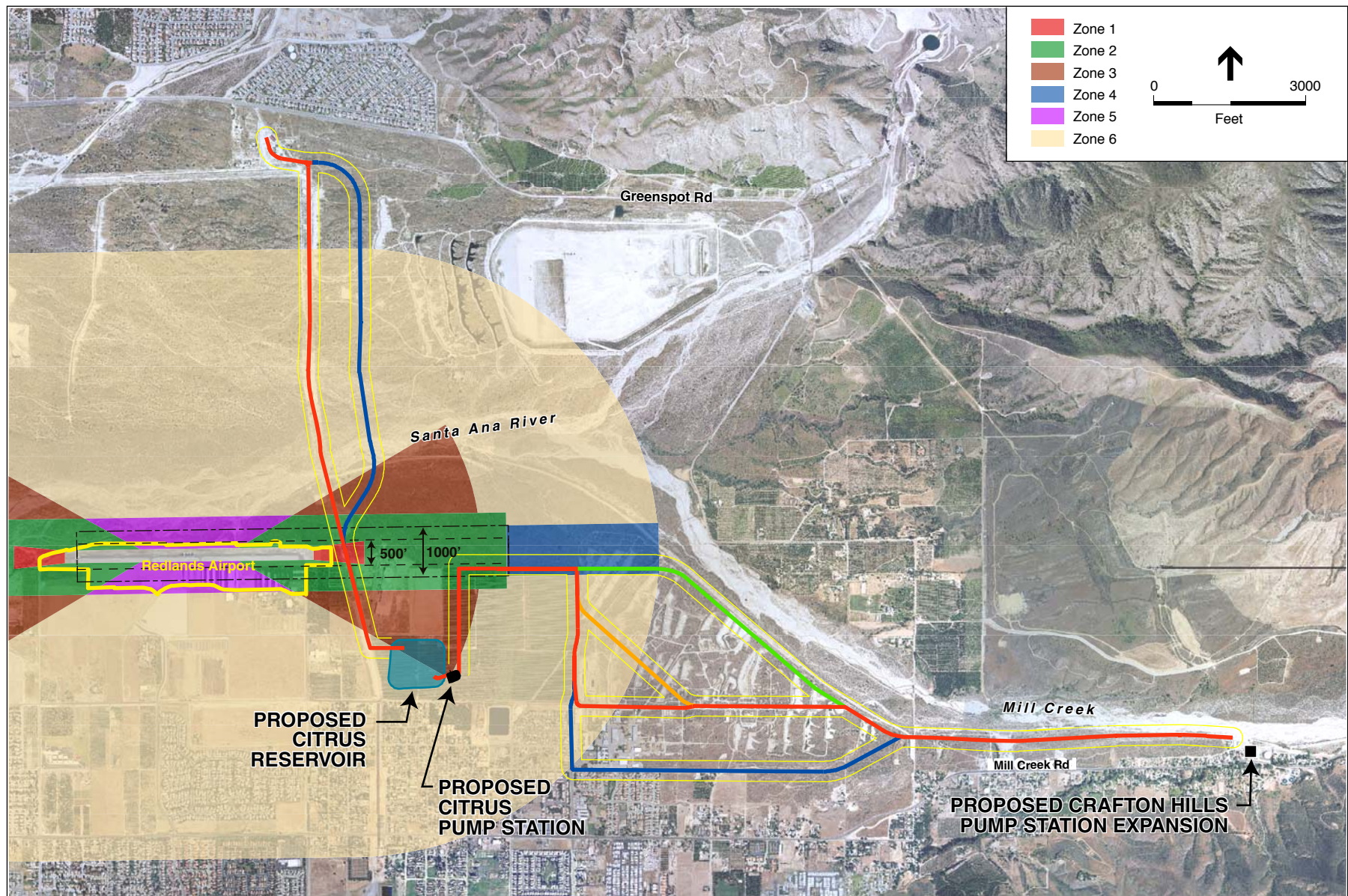
Zone	Location/Description	Maximum Density	Prohibited Uses	Comments
D	Other Airport Environs Extends south of area B to edge of AIA. Negligible risk. Potential for annoyance from overflight.	Residential: No limit Other uses: No Limit Open Land Required: None	<ul style="list-style-type: none"> ▪ Children's schools, day care, libraries ▪ Hospitals and nursing homes ▪ Objects exceeding FAR Part 77 requirements ▪ Hazards to flight (physical, visual, electronic interference, etc.) ▪ Dedication of aviation easements 	<p>For each alternative alignment except Alternative Alignment 3, a portion of the proposed pipeline would be constructed within Zone D.</p> <p>The proposed Citrus Pump Station would be constructed in this zone.</p>

Key:

AGL - Above Ground Level

Du/ac - Dwelling unit per acre

SOURCES: Shutt Moen, 2003, *Redlands Municipal Airport Land Use Compatibility Plan*; Caltrans, *California Airport Land Use Compatibility Planning Handbook*, 2002; ESA 2007



SOURCE: GlobeXplorer, 2007; City of Redlands, 2007; Caltrans, 2002; ESA 2008.

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Figure 3.8-3
Airport Safety Zones: Existing Conditions

3.8.2 Setting

3.8.2.1 Regional Setting

The proposed project is located in southwest San Bernardino County, approximately eight miles east of the City of San Bernardino and 60 miles east of the City of Los Angeles. This portion of San Bernardino County is defined as the Valley Planning Region, which is bounded by the San Bernardino and Angeles National Forests to the north and east (including the San Bernardino and San Jacinto Mountains), the Yucaipa and Crafton Hills to the east. The county borders with Los Angeles, Orange, and Riverside Counties. The Valley Planning Region includes only 2.5 percent of the land in San Bernardino County but includes 75 percent of the county's population (URS, 2007a).

3.8.2.2 Project Area Setting

The proposed project is located in unincorporated San Bernardino County, within the community of Mentone, near the Cities of Highland and Redlands. The city boundaries are shown in **Figure 3.8-4**. Land uses in the project vicinity are illustrated in **Figure 3.8-5**. Land uses in and around the project corridor include residential, commercial, industrial, open space, floodplain, agriculture, and public. Public land uses in the vicinity of the proposed project include a fire station and library, airports, schools, parks, and reservoirs. General descriptions of land uses associated with each component of the proposed project are provided below; specific land use categories associated with each component of the proposed project as designated by the County, Redlands, and Highland general plans are summarized in **Table 3.8-2**.

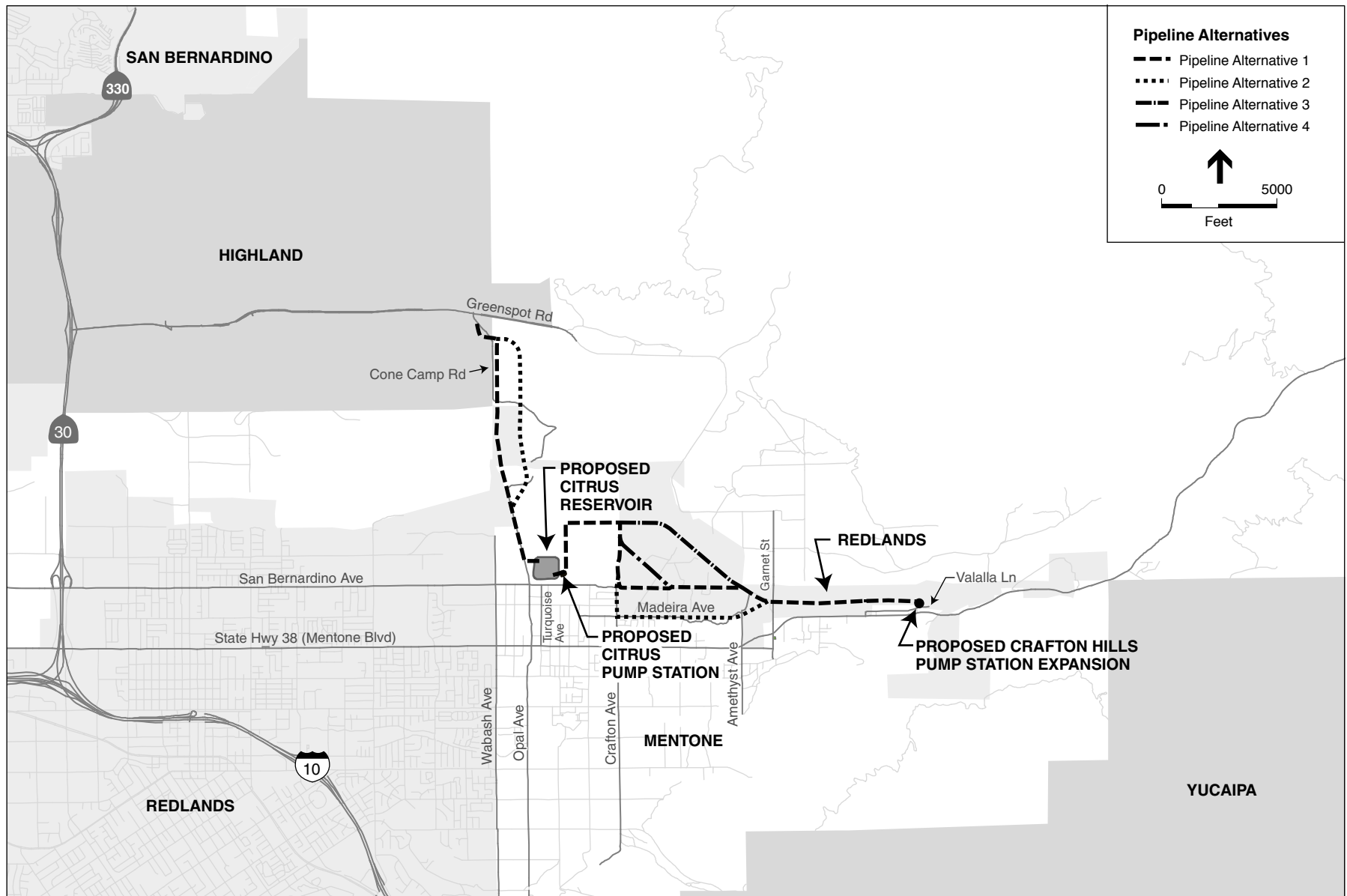
The land uses affected by or adjacent to the pipeline routes include open space, agriculture, floodplain, public, residential, and industrial. Properties are either privately owned or owned by SBVWCD or the SBCFCD. **Figure 3.8-6** identifies land ownership in the project area.

Pipeline Alternative Alignments

From the Foothill Pump Station south to the Santa Ana River, each alternative alignment would traverse property owned by the SBVWCD or the SBCFCD. As the pipeline crosses the river, it traverses the WSPA established in 1998 by the USACE and local sponsors as mitigation for the construction of the Seven Oaks Dam upstream on the Santa Ana River. The WSPA includes over 700 acres of alluvial fan scrub in the Santa Ana River wash downstream of Seven Oaks Dam (City of Highland, 2006). The Santa Ana woolly star is a federally endangered and state endangered plant that only occurs along the Santa Ana River.

Additional information about the WSPA and the effects of the proposed project on the woolly star is included in Section 3.3, Biological Resources.

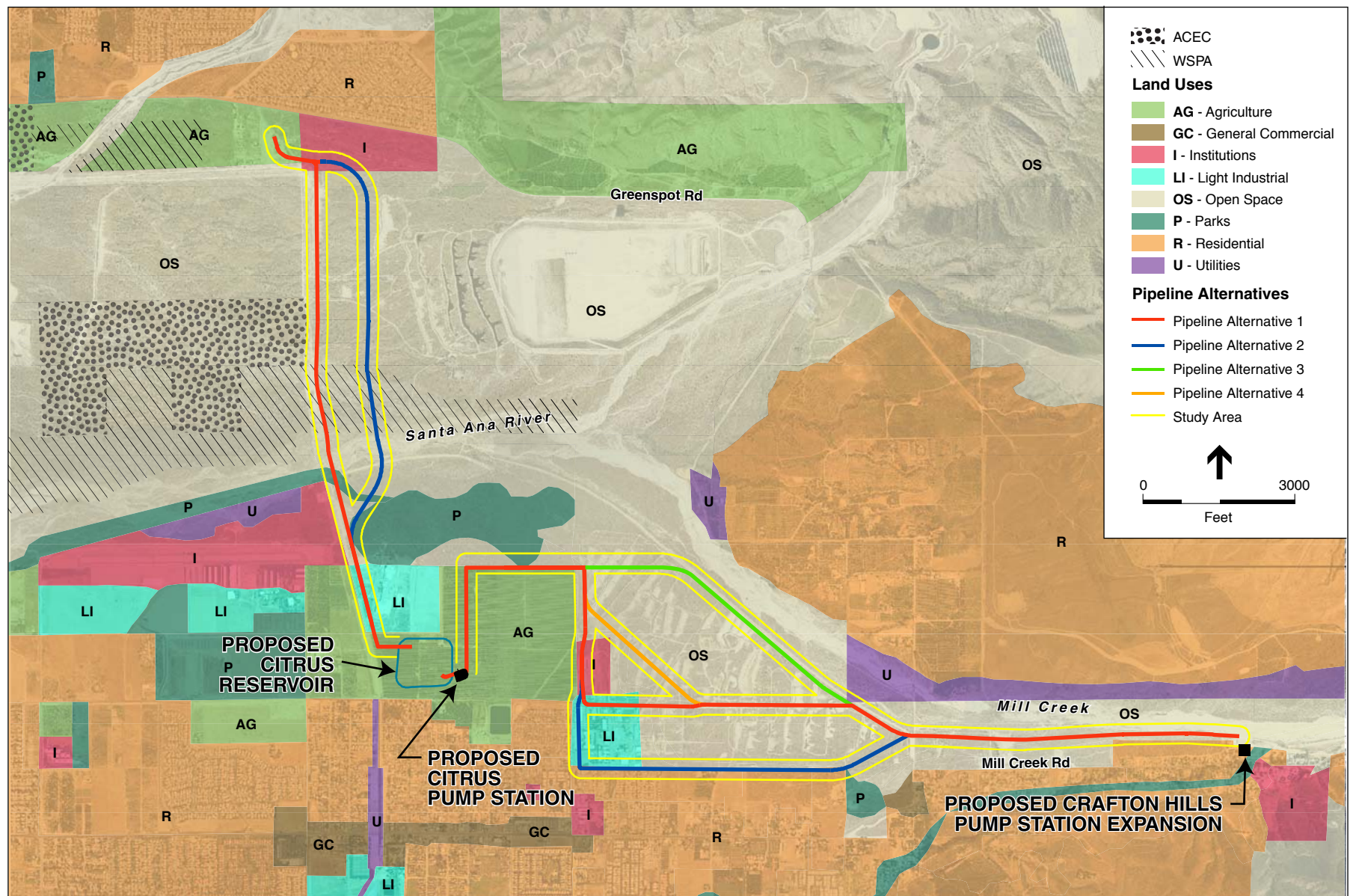
The BLM in accordance with the California Desert Conservation Area Plan has designated three ACEC in the Santa Ana River flood plain near the project area. ACECs delineate unique or limited natural features or habitat areas (City of



SOURCE: ESA, 2007.

DWR - East Branch Extension . 206008.01

Figure 3.8-4
City Boundaries



SOURCE: GlobeXplorer, 2007; SANBAG, 2005.

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Figure 3.8-5
Land Uses
in Project Vicinity

**TABLE 3.8-2
CITY AND COUNTY LAND USE CATEGORIES BY PROJECT COMPONENT**

Project Component	Pipeline Segment	County Land Use Categories (a)	Redlands Land Use Categories (b)	Highland Land Use Categories (c)
Alternative Alignment 1	Cone Camp /Opal Ave	FW, IR	FC, PUB	AG/EQ, PUB, OS
	Citrus Orchard	AG	FC, PUB	---
	San Bernardino Ave	---	FC, PUB, LI	---
	Mill Creek	RS	FC	---
Alternative Alignment 2	Highland Open Space	FW, IR	FC, PUB	AG/EQ, PUB, OS
	Citrus Orchard	AG	FC, PUB	---
	Crafton/Madeira Ave	RS, RM	FC, LI, RL	---
	Mill Creek	RS	FC	---
Alternative Alignment 3	Cone Camp /Opal Ave	FW, IR	FC, PUB	AG/EQ, PUB, OS
	Citrus Orchard	AG	---	---
	Mill Creek Levee	---	FC	---
	Mill Creek	RS	FC	---
Alternative Alignment 4			FC	
Citrus Reservoir and Citrus Pump Station		AG	---	---
Crafton Hills Pump Station		RS	---	---

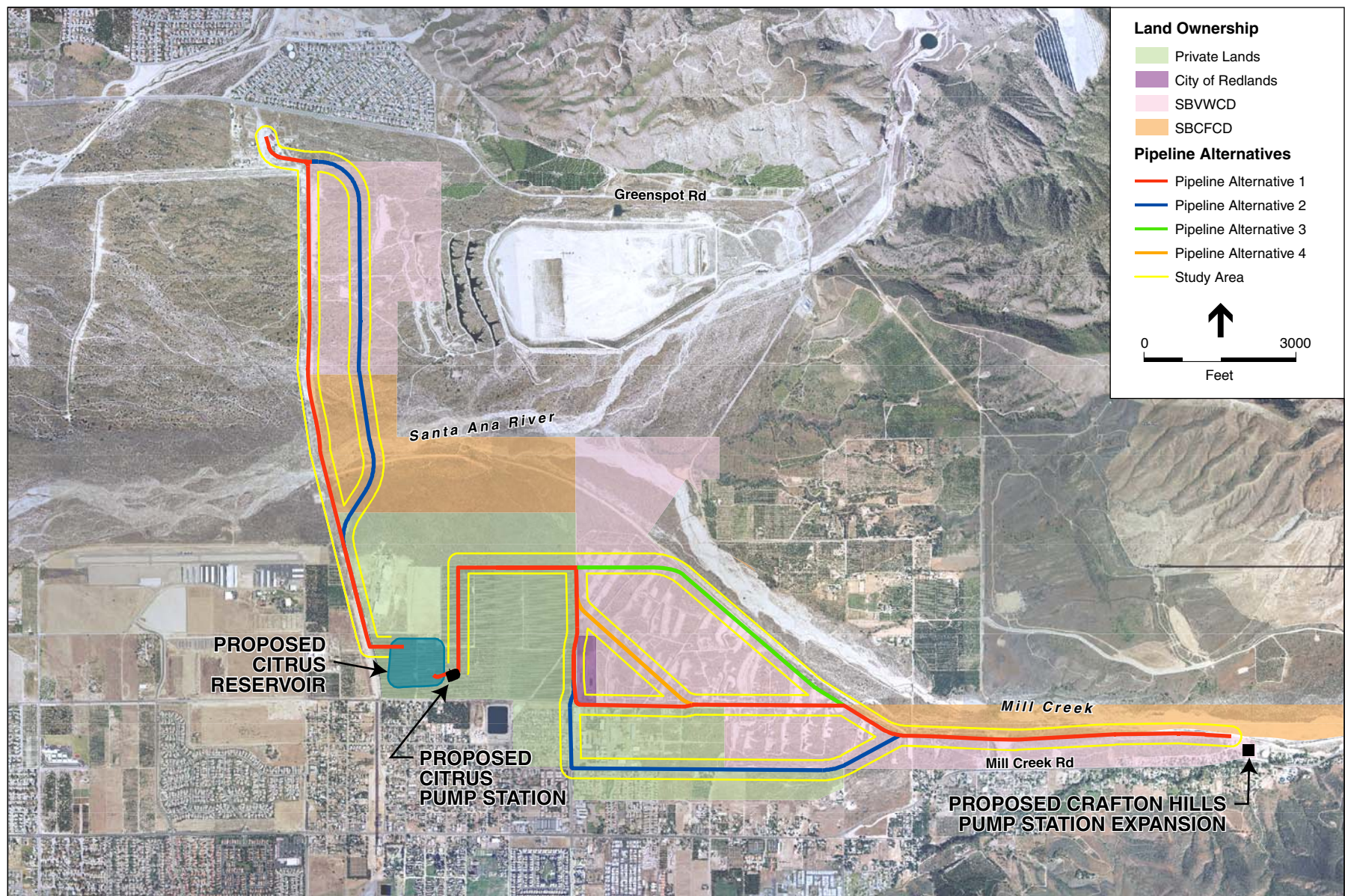
Abbreviations

AG	Agriculture	IR	Regional Industrial	RL	Low Density Residential
AG/EQ	Agriculture/Equestrian	LI	Light Industrial	RM	Multiple Residential
FW	Floodway	OS	Open Space	RS	Single Residential
FC	Flood Control/ Construction Aggregates	PUB	Public/Institutional		

SOURCES: (a) County of San Bernardino General Plan (2007), Land Use Plan, Maps FH31, FH32; (b) City of Redlands General Plan (1997), Northeast Land Use Map; (c) City of Highland General Plan (2006), Land Use Element, Figure 2-2.

Highland, 2006). The three ACECs in the project area provide for protection of the woolly star and slender-horned spineflower. (The slender-horned spineflower also is a federally endangered and state endangered plant.) The combined size of the three ACECs is approximately 760 acres. None of the alternative alignments would traverse any BLM-designated ACECs.

The nearest ACEC is located adjacent to the western edge of the MWD Inland Feeder pipeline corridor. The proposed project would be located on the eastern side of the MWD corridor and would therefore not affect the ACEC. On the south side of the Santa Ana River the pipeline follows the Opal Avenue public right-of-way adjacent to private properties. The abandoned Burlington Northern Railroad alignment parallels Opal Avenue to the west. The Redlands Municipal Airport is located approximately 500 feet west of Opal Avenue. This portion of the proposed pipeline would pass through a RPZ, which is identified as Zone A in the Redlands ALUCP.



SOURCE: GlobeXplorer, 2007; ESA 2008.

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Figure 3.8-6
Local Land Ownership
in the Project Vicinity

From Opal Avenue the pipeline feeds into the Citrus Reservoir that would be located within an existing privately-owned citrus orchard. From the Citrus Reservoir and Citrus Pump Station within the citrus orchard, the pipeline would follow the Crafton Avenue public right-of-way southward. From Crafton Avenue the alternative alignments either traverse SBVWCD property or follow public rights-of-way to the Craft Hills Pump Station.

The roadways affected by Alternative Alignment 1 would include: Greenspot Road, Cone Camp Road, Opal Avenue, Crafton Avenue, San Bernardino Avenue, Garnet Street, Sycamore Street, and Valalla Lane.

The roadways affected by Alternative Alignment 2 would include: Greenspot Road, Cone Camp Road, Opal Avenue, Crafton Avenue, Madeira Avenue, Amethyst Street, Garnet Street, Sycamore Street, and Valalla Lane.

The roadways affected by Alternative Alignment 3 would include: Greenspot Road, Cone Camp Road, Opal Avenue, Crafton Avenue, Garnet Street, Sycamore Street, and Valalla Lane.

The roadways affected by Alternative Alignment 4 would include: Greenspot Road, Cone Camp Road, Opal Avenue, Crafton Avenue, Garnet Street, Sycamore Street, and Valalla Lane.

Alternative Alignments 1 and 2 would be located within public rights-of-way adjacent to private properties with residential and commercial land uses. Alternative Alignment 2 would be adjacent to various public land uses including the Mentone Elementary School (Redlands Unified School District) located on Crafton Avenue between Madeira and Mentone Avenue,⁴ the San Bernardino County Fire Department's Mentone Station 9 located on the corner of Crafton Avenue and Mentone Avenue,⁵ the San Bernardino County Mentone Branch Library located on Mentone Avenue between Wabash and Crafton Avenues, and the Florence Reservoir located on Nice Avenue between Wabash and Crafton Avenues.

Citrus Reservoir and Citrus Pump Station

The Citrus Reservoir and Citrus Pump Station would be located within the boundaries of an existing citrus orchard. The reservoir and pump station would permanently convert 35 acres of existing farmland used for growing oranges to non-agricultural use. The citrus orchard is owned by Mentone Citrus. DWR is currently negotiating to purchase this property. If DWR does not purchase the property, then DWR would secure a temporary easement through the orchard for purposes of constructing the reservoir and pump station and a permanent easement for purposes of operating, and maintaining the reservoir and pump station. The reservoir would be located approximately 2,600 feet from the eastern edge of the airport and within the AIA defined by the ALUCP.

⁴ Redlands Unified School District, School Boundary Maps, <http://www.redlands.k12.ca.us/>, accessed on July 21, 2007.

⁵ San Bernardino County Fire Department, Mountain Division, http://www.sbcfire.org/fire_rescue/mountain4.asp, accessed on July 21, 2007.

The orchard is in an unincorporated area of San Bernardino County and is designated as Agriculture (AR) in the County General Plan Land Use Plan (2007). The County Land Use Plan includes the Land Use Map, which combines both land use designations and zoning classifications into 18 zoning districts. The AR zoning district includes areas where agriculture is the primary land use, but other secondary land uses that support agriculture are permitted. The AR district is located in areas “with limited infrastructure facilities and where limited public improvements will be planned or developed in the next 20 years” (URS, 2007a). Therefore, the reservoir and pump station improvements are compatible with the site’s land use and zoning designations.

The orchard also is part of Crafton Hills Groves, which is designated as an agricultural open space district in the Open Space Element of the County General Plan. The existing citrus operations of Crafton Hills Groves are an example of the historical citrus fields that once dominated the San Bernardino Valley.

Crafton Hills Pump Station Expansion

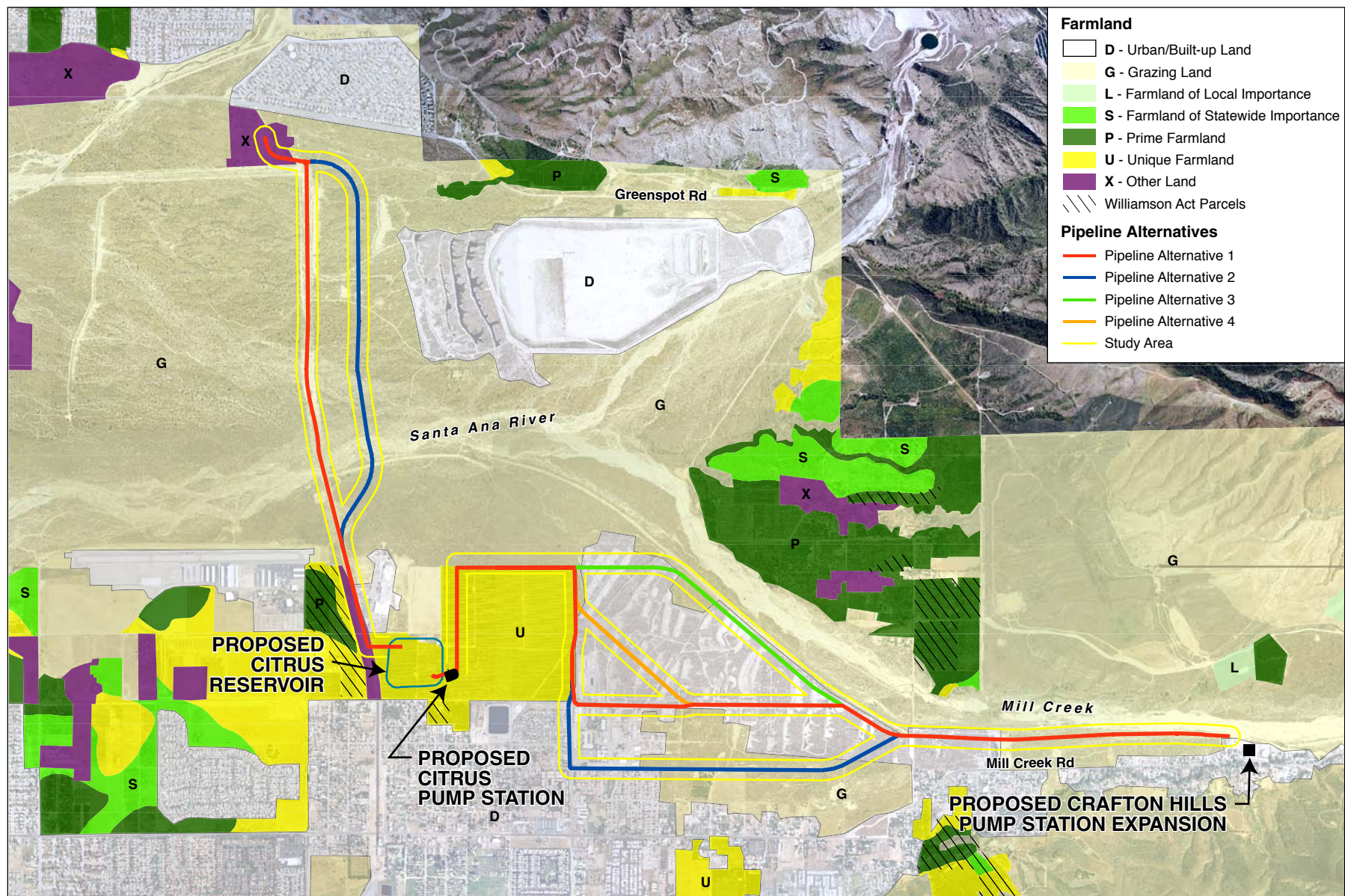
The Crafton Hills Pump Station Expansion would be located within the footprint of the existing Crafton Hills Pump Station, which is located in unincorporated San Bernardino County. The pump station is owned and operated by DWR. The pump station site is designated as Single Residential (RS) on the Land Use Map in the County General Plan Land Use Plan. The RS zoning district denotes areas where there are single-family homes on individual lots and accessory, non-residential uses that complement residential land use. The pump station expansion is compatible with the site’s land use classification as public utilities are accessory uses that complement and support neighboring residential land use.

Agricultural Resources

Agricultural resources in the project area are shown in **Figure 3.8-7**. The proposed pipeline, reservoir, and pump station would be constructed on or adjacent to land designated as Prime Farmland, Unique Farmland, Grazing Land, and Urban Land (Department of Conservation, 2007a). The proposed pipeline would be constructed adjacent to land under Williamson Act contract, just east of Redlands Municipal Airport (see Figure 3.8-7) (Department of Conservation, 2007b). However, none of the alternative alignments would be constructed within lands under Williamson Act contracts.

Pipeline Alternative Alignments

Each alternative alignment would run along Opal Ave south of the Santa Ana River east of the airport that are designated as Prime Farmland and Unique Farmland. In addition, all three alternative alternatives would run through and along the citrus orchard, which is considered Unique Farmland (Figure 3.8-7). The remaining portions of the alternative alignments run through Grazing Land and Urban Land.



SOURCE: GlobeXplorer, 2007; Farmland Mapping and Monitoring Program, 2006.

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Figure 3.8-7
Agricultural Resources

Citrus Reservoir and Citrus Pump Station

The proposed reservoir and pump station would be located on the citrus orchard, which is considered Unique Farmland. The proposed project would convert 35 acres of Unique Farmland to non-agricultural use.

Crafton Hills Pump Station Expansion

The proposed pump station expansion would be located at the existing Crafton Hill Pump Station, which is considered Urban Land. The pump station expansion would be built within the footprint of the existing pump station, which already has been graded and paved.

Recreational Facilities

There are a variety of recreational facilities in the project vicinity, including San Bernardino National Forest, local parks, open spaces, multi-purpose trails, and bicycle paths, as described below and indicated in **Figure 3.8-8**.

US Department of Agriculture Forest Service

The US Department of Agriculture Forest Service (USFS) manages the San Bernardino National Forest, located to the north and west of the proposed project site. The San Bernardino National Forest (SBNF) includes over 450,000 acres in San Bernardino County, with maximum elevation of 11,500 feet at Mount San Gorgonio. SBNF contains a variety of habitat and over 440 wildlife species, including over 150 threatened, endangered, and sensitive species (USFS, 2004, 2007). SBNF is approximately 0.5 miles from the closest component of the proposed project.

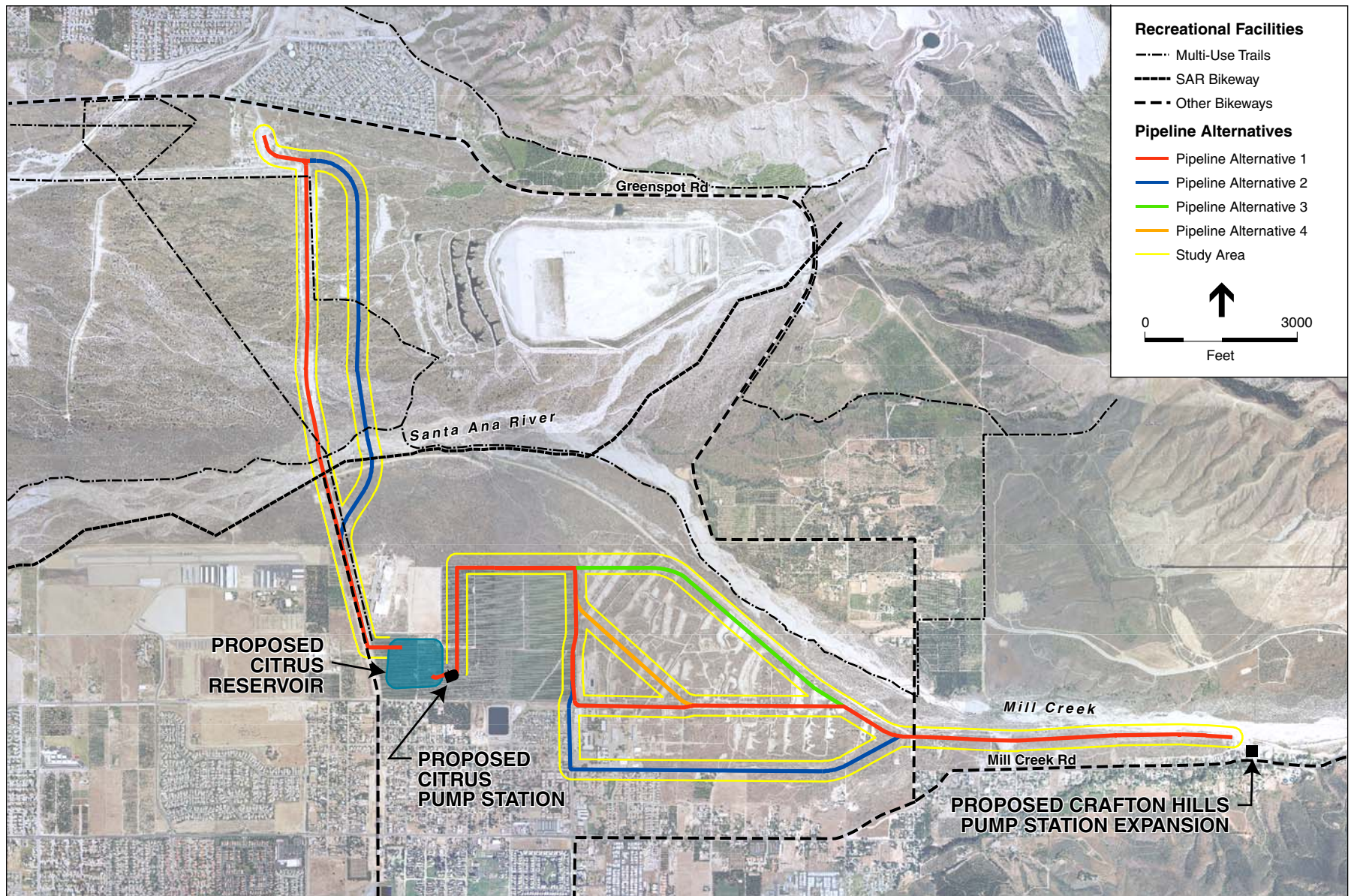
As part of the National Forest system, the SBNF is public land set aside for the conservation of natural resources such as trees, water, livestock, minerals, wildlife and recreation (USFS, 2007). The SBNF provides open space and recreational opportunities, including hiking, biking, camping, fishing, and wildlife viewing. SBNF includes over 500 miles of multi-purpose trails, including wilderness trails, motorized trails, and hiking/biking/equestrian trails (USFS, 2007).

San Bernardino County Regional Parks

Yucaipa Regional Park is the closest County-owned park to the project corridor, located approximately 2.5 miles southeast of Crafton Hills Pump Station, on the south side of the Crafton Hills. Yucaipa Regional Park includes 885 acres of land located in the foothills of the San Bernardino Mountains (San Bernardino County Regional Parks, 2007). Recreational facilities at the park include campsites, recreational vehicle (RV) hook ups, showers, picnic and grill sites. Recreational opportunities at the park include camping, fishing, swimming, boating, and volleyball.

San Bernardino County Bikeways Plan

The San Bernardino County Non-Motorized Transportation Plan 2001 Update (Countywide Bike Plan) identifies, coordinates, and prioritizes all bicycle-related plans, policies, and programs in the county (SANBAG, 2001). The Countywide Bike Plan focuses on providing bikeways and multi-purpose trails that link incorporated cities and adjacent counties, for purposes of both commuting and recreation.



SOURCE: GlobeXplorer, 2007; SANBAG, 2007.

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Figure 3.8-8
Recreational Facilities in the
Project Vicinity

The Santa Ana River Trail is a Priority Class 1 Bikeway Project in the project area (Figure 3.8-8). A Class 1 Bike Path is a right-of-way separate from a street or highway for bicycle travel, typically along rail, water, or utility corridors. The Santa Ana River Trail, when complete, will be a continuous multi-purpose corridor along the river that stretches from the Pacific Ocean in Huntington Beach to the San Bernardino Mountains. The segment of the trail between Redlands and Colton has been under development in recent years. The portion of the trail that crosses the corridor for the proposed alternative alignment is not complete and therefore would not be affected by construction of the proposed project.

There are two Priority Class 2 or 3 Bikeway Projects in the project area, along Greenspot Road and along Opal Avenue (Figure 3.8-8). A Class 2 Bike Lane is a striped lane for one-way bike travel on a street or highway. A Class 3 Bike Route is a travelway for bicycles through a community denoted by signs only. Both proposed bikeways are not complete, and therefore would not be affected by construction of the proposed project. In addition, implementation of the proposed project would not preclude future development of the bikeways because the proposed pipeline would be underground.

San Bernardino County Open Space Plan

The San Bernardino County Open Space Plan delineates various categories of open space in the county, such as trails, wildlife corridors, open space, and ACECs. The project area includes regional trails, open space areas that are considered valuable for recreation and agriculture, and three ACECs. The remaining trails and areas of open space are described below and shown on Figure 3.8-8.

There are three multi-purpose regional trails in the project vicinity: Mill Creek Trail, Santa Ana River Trail, and Crafton Hills Trail. The City of Redlands acquired 95-acres of undeveloped land south of the airport, at the intersection of San Bernardino and Wabash Avenues, with the intention of developing a sports complex.⁶ The proposed complex would include soccer fields, softball fields, picnic facilities, playgrounds and other recreational facilities.

The Santa Ana River Open Space Area is one of the most important open space resources in the Valley Region of San Bernardino County, which includes the project area. The river includes riparian and habitat areas that support wildlife and endangered species, such as the Santa Ana sucker and Santa Ana River woolly star. The Santa Ana River Open Space Area is also a valuable recreational resource. One of the objectives for this open space area is maintaining it as a natural corridor. The proposed alternative alignments cross this open space area and would temporarily impact this area during pipeline construction.

The Mill Creek Open Space Area includes various vegetation and habitat types. The objectives for this open space area include maintaining its natural habitat and working towards public ownership. The proposed project does not directly cross or impact this open space area. However, Mill Creek is a tributary of the Santa Ana River and thus the two associated open space areas are connected.

⁶ City of Redlands Park Division, http://www.ci.redlands.ca.us/works/city_parks.htm, accessed July 21, 2007.

The Crafton Hills Open Space Area includes lands in the Crafton Hills above an elevation of 2,400 feet. This open space area is adjacent to Yucaipa Regional Park and provides a continuation of relatively undisturbed habitat and open space. This open space area provides valuable recreational resources and natural habitats for the urban Redlands/Yucaipa area.

City of Redlands Recreational Facilities

The City of Redlands Parks Department owns and operates 14 parks that cover 143 acres of land.⁷ The closest city park to the project corridor is Crafton Park, a 7.5 acre facility located at the intersection of Wabash and Independence Avenues. Crafton Park includes picnic and playground facilities and a soccer field. Other city parks in the vicinity of the project area are Community Park and Sylvan Park.

The City of Redlands acquired 95-acres of undeveloped land south of the airport, at the intersection of San Bernardino and Wabash Avenues, with the intention of developing a sports complex.⁸ The proposed complex would include soccer fields, softball fields, picnic facilities, playgrounds and other recreational facilities.

City of Redlands Trails Master Plan

The City of Redlands Trails Master Plan is part of the Open Space and Conservation Element in the Redlands General Plan. This Trails Master Plan identifies the Santa Ana River Trail in the project area, as described previously. In addition, the Trails Master Plan identifies the Santa Fe-Mentone Trail running along Opal Avenue. This trail is a primary community trail, which originates in the City of Redlands and connects to the Santa Ana River Trail, which is a regional trunk trail that passes through and links multiple cities and counties.

City of Highland Recreational Facilities

The City of Highland is actively planning to increase future park and recreation facilities within the city limits. The closest city park to the project corridor is Aurantia Park, a 12-acre park located on Greenspot that includes a dog park and walking trails. Aurantia Park is approximately 0.5 miles from the current Foothill Pump Station.⁹ The city currently is constructing another 2.5 acre park approximately 0.5 miles from Foothill Pump Station.¹⁰

City of Highland Multi-Use Trail Master Plan

The City of Highland's Multi-Use Trail Master Plan is summarized in the Highland General Plan Conservation and Open Space Element (2006). The Trail Master Plan proposes a mixed use trail system that would accommodate equestrian, biking, hiking, and other recreational uses. The Trail Master Plan includes multi-use trails in the proposed pipeline corridors in the vicinity of Cone Camp Road and Opal Avenue, as indicated in Figure 3.8-8. These trails are proposed for future development, but are not likely to be realized during the next five-years.¹¹ The proposed project

⁷ Ibid

⁸ Ibid.

⁹ Personal communication, Sean Kelleher, City of Highland Planning Department, July 24, 2007.

¹⁰ Ibid.

¹¹ Ibid.

would not preclude future development of these trails because the proposed pipeline would be underground.

Redlands Municipal Airport

REI is located in the southwestern portion of San Bernardino County, approximately two miles north and two miles east of the City's center, and approximately five miles east of the San Bernardino International Airport (SBD). The airport is situated south of the Santa Ana Wash, between Judson Street and Wabash Avenue and includes a single runway, runway 8-26, that follows an east-west alignment. The airport is classified in the National Plan of Integrated Airport Systems (NPIAS) as a general aviation airport capable of accommodating all small general aviation aircraft with weights of up to 12,500 pounds. The airport also provides service to business jets, and sells fuel for both piston-powered and jet aircraft. Recent improvements have included the use of pilot-controlled runway lighting, which facilitates 24-hour operations.

The proposed project is located within five statute miles of aircraft movement areas as defined by FAA Advisory Circular (AC) 5200/150-33B, "Wildlife Hazard Attractants on and Near Airports." The AC addresses identifies separation criteria (prescribed distances) between aircraft movement areas and land uses, such as open water facilities, that could attract potentially hazardous wildlife, such as birds or water fowl. Refer back to Figure 3.8-1 for the location of these separation criteria and the proposed Citrus Reservoir.

3.8.3 Impact Assessment

The following sections discuss the key issue areas identified in the *CEQA Guidelines* with respect to the project's potential effect on land resources and land use compatibility. Significance thresholds are identified and a significance conclusion is made following the discussion.

3.8.3.1 Divide an Established Community

This section discusses the following CEQA Checklist question:

Would the project physically divide an established community?

Significance Threshold

The project would have a significant impact if it physically divided an established community. A substantial adverse physical division could include the construction of a roadway or other physical barrier that would divide an established community.

Impact Analysis

The proposed project includes the construction of underground water pipeline across the Santa Ana River and within existing roadway right-of-ways. The project also includes the construction of a reservoir and associated support pump station facilities. Construction of the

pipeline, reservoir, and pump station would not create a physical barrier that would divide an established community. The proposed project would not have an impact.

Mitigation Measures

None required.

Significance Conclusion

No impact. Construction of the proposed project would not create a physical barrier that would divide an established community.

3.8.3.2 Consistency with Land Use Plans

This section discusses the following CEQA Checklist question:

Would the project conflict with any applicable land use plan, policy, or regulatory agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Significance Threshold

The project would have a significant impact if implementation of the project resulted in direct conflict with applicable land use plans adopted to avoid or mitigate for environmental effects. A significant impact would result if the proposed facilities were to be constructed on land with zoning that did not support the proposed use.

Impact Analysis

Pipeline Alternative Alignments

The underground pipeline would be partially installed within private and public lands. The overlying land uses are generally open space or roadways. DWR would acquire at least 100 feet of permanent easement across the private properties along the chosen pipeline route. Once installed, the pipeline would be generally compatible with existing overlying land uses. A permanent access road would be maintained to allow maintenance vehicle access to the pipeline. Through the WSPA, this permanent vehicle access could significantly affect the function of the conservation area. Mitigation Measure LU-1 would restrict access for vehicles within the WSPA. Routine vehicle access to the pipeline within other open space areas would be infrequent and would not disrupt the function of the open space areas. Installation of the pipeline within the public streets would not affect long-term use of the streets. Installation of the pipeline near or through flood control facilities and water conservation facilities would not affect their function since they would be restored to their original condition, per Mitigation Measure LU-2.

Easement acquisition would be negotiated between DWR and individual land owners. Because easement acquisition would not conflict with existing land uses along the alternative alignment, impacts are considered less than significant.

Citrus Reservoir and Citrus Pump Station

The Citrus Reservoir and Pump Station would be constructed within land designated as AR in the County General Plan. The AR zoning district permits public infrastructure improvements, and therefore, the proposed facilities are compatible with the site's land use and zoning designations.

Crafton Hills Pump Station Expansion

Construction and operation of the proposed project would increase the size of the existing Crafton Hill Pump Station. The pump station site is currently owned and operated by DWR. The pump station expansion would not affect existing land uses at or adjacent to the pump station. The pump station site is designated as RS on the Land Use Map in the County General Plan Land Use Plan. The RS zoning district denotes areas where there are single-family homes on individual lots and accessory, non-residential uses that complement residential land use. The pump station expansion is compatible with the site's land use classification as public utilities are accessory uses that complement and support neighboring residential land use.

Mitigation Measures

LU-1: The permanent easement through the WSPA shall not allow vehicle traffic. No permanent roads shall be constructed through the WSPA.

LU-2: Flood control facilities, water conservation facilities including percolation ponds, roadways and private yards and driveways, will be returned to their original condition following installation of the pipeline.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measures LU-1 and LU-2 would ensure that the proposed project is consistent with land use plans, policies, and regulatory agencies.

3.8.3.3 Effects to Agricultural Areas and Farmland

This section discusses the following CEQA Checklist questions:

Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Would the project conflict with zoning for agriculture or a Williamson Act Contract?

Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?

Significance Threshold

The project would have a significant impact if it resulted in substantial adverse effect on designated Prime Farmland, Unique Farmland, or Farmlands of Statewide Importance. A significant impact would also result if the project occurred on land under a Williamson Act Contract and the proposed use was not allowed. For the purpose of this analysis, a substantial adverse agricultural impact would result if the agricultural conversion was determined significant based on the LESA model thresholds (see **Appendix F**).

Impact Analysis

Construction of the Citrus Reservoir and adjoining pipeline would occur within State designated Unique Farmland. The existing citrus orchard has been designated Unique Farmland by the California Department of Conservation. The proposed underground pipeline would not result in permanent conversion of farmland to non-agricultural uses since it would be buried and the land uses restored to their previous conditions after construction. However, construction of the Citrus Reservoir would result in the permanent conversion of over 35 acres of Unique Farmland to non-agricultural uses. The proposed project would import water that would support urban and agricultural uses in the region.

The conversion of the FMMP Unique Farmland was analyzed for significance using the California Department of Conservation's Land Evaluation and Site Assessment (LESA) Model. The LESA model is a tool used to rate the relative quality of agricultural land based upon specific measurable features. The LESA model is composed of six different factors. Two factors evaluate soil quality (Land Use Capability Class and Storie Index), the remaining four factors evaluate site suitability (project size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands). The *CEQA Guidelines* sites use of the LESA model as a recommended approach to determining impact significance. The model analysis suggests that the conversion of this agricultural land would not be a significant impact. The on-site soil quality was the major factor in the LESA model that resulted in a less-than-significant impact conclusion.

Appendix F includes the results of the LESA model conducted for the proposed project. Since the project involves providing water to the region that would reduce the stress on groundwater supplies, the project is seen as beneficial to agriculture overall in the region. As a result, the removal of 35 acres of Unique Farmland is not considered to significantly diminish agricultural uses in San Bernardino County.

The proposed project area is not within a Williamson Act contract. The closest Williamson Act properties are located west of Opal Avenue (Figure 3.8-7). The project would avoid these areas. The Citrus Reservoir and Citrus Pump Station site would be constructed within land designated as AR in the County General Plan. The AR zoning district permits public infrastructure

improvements, and therefore, the proposed facilities are compatible with the site's land use and zoning designations. Impacts would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. The results of the LESA model suggest that the conversion of Unique Farmland to non-agricultural uses as a result of construction of the Citrus Reservoir would not be a significant impact. The project would not conflict with zoning for agriculture or a Williamson Act contract.

3.8.3.4 Effects to Recreational Facilities

This section discusses the following CEQA Checklist questions:

Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

Significance Threshold

The project would have a significant impact if it resulted in the accelerated deterioration of local or regional recreational facilities and parks or if new recreational facilities were constructed which had an adverse impact on the environment.

Impact Analysis

As shown on Figure 3.8-8, the alternative alignments would traverse planned bikeways and trails. The two bikeway projects in the project area are not complete, and therefore would not be affected by construction of the proposed project. Once complete the project would not interfere with the planned bike routes. The segment of the Santa Ana River trail between Redlands and Colton has been under construction in recent years. The portion of the trail that crosses the corridor for the proposed alternative alignment is not complete and therefore would not be affected by construction of the proposed project.

Implementation of the proposed project would not preclude future development of the Santa Ana River trail because the proposed pipeline would be underground. Construction of the Citrus Reservoir and Citrus Pump Station would not affect recreational facilities. Construction of the expansion of the Crafton Hills Pump Station would not affect recreational facilities. Additionally, the project is not a direct population generator, as a housing development would be, therefore, the

project would not result in the increased use of regional recreational facilities which would cause accelerated deterioration. There would be no impact.

Mitigation Measures

None required.

Significance Conclusion

No impact. Though the alternative alignments would traverse planned bikeways and trails, the facilities are not complete and therefore would not be affected by construction of the proposed project.

3.8.3.5 Effects on Airport Operations

This section discusses the following significance threshold question:

Would the project conflict with existing or future airport operations or conflict with an approved plan, such as an airport Master Plan, Airport Layout Plan, or ALUCP?

Significance Threshold

The project would have a significant impact if it resulted in substantial adverse effect on existing or proposed airport operations or conflict with an approved plan, such as the Airport Master Plan or ALUCP.

Impact Analysis

DWR representatives met with members of the Caltrans Division of Aeronautics on September 12, 2007, to discuss the proposed project components and their potential effects on land use and aviation at REI. Caltrans staff reviewed the proposed project design and its potential effects based on the 2003 ALUCP analysis.

Caltrans staff stated that operations at REI had changed significantly since publication of the 2003 ALUCP. The airport now operates on a 24-hour basis, includes new pilot-controlled medium intensity lighting to serve aircraft at night, and sells both avgas and jet fuel to accommodate both piston- and turbine-powered aircraft. Airport operations have increased following the recent closure of nearby Rialto Municipal Airport. In addition, the published approach and departure patterns have changed since publication of the 2003 ALUCP, and a new Airport Layout Plan (ALP) has been developed by FAA in 2005 (Caltrans 2007). As a result of these changes to airport facilities and operations, Caltrans staff suggested that DWR staff review the location of its proposed project using the 2005 ALP and identify new safety zones that would reflect current facilities and operations using both the existing and proposed runway lengths shown in 2005 ALP.

DWR performed the subsequent analysis as requested and identified safety zones and height restrictions that would apply to new land uses in the AIA. Subsequent analysis was developed using guidance set forth in Caltrans' California Airport Land Use Planning Handbook (2002). This analysis was performed to more accurately identify potential impacts on airport operations or other constraints, but these safety zones have not been adopted by the City as revisions to the ALUCP.

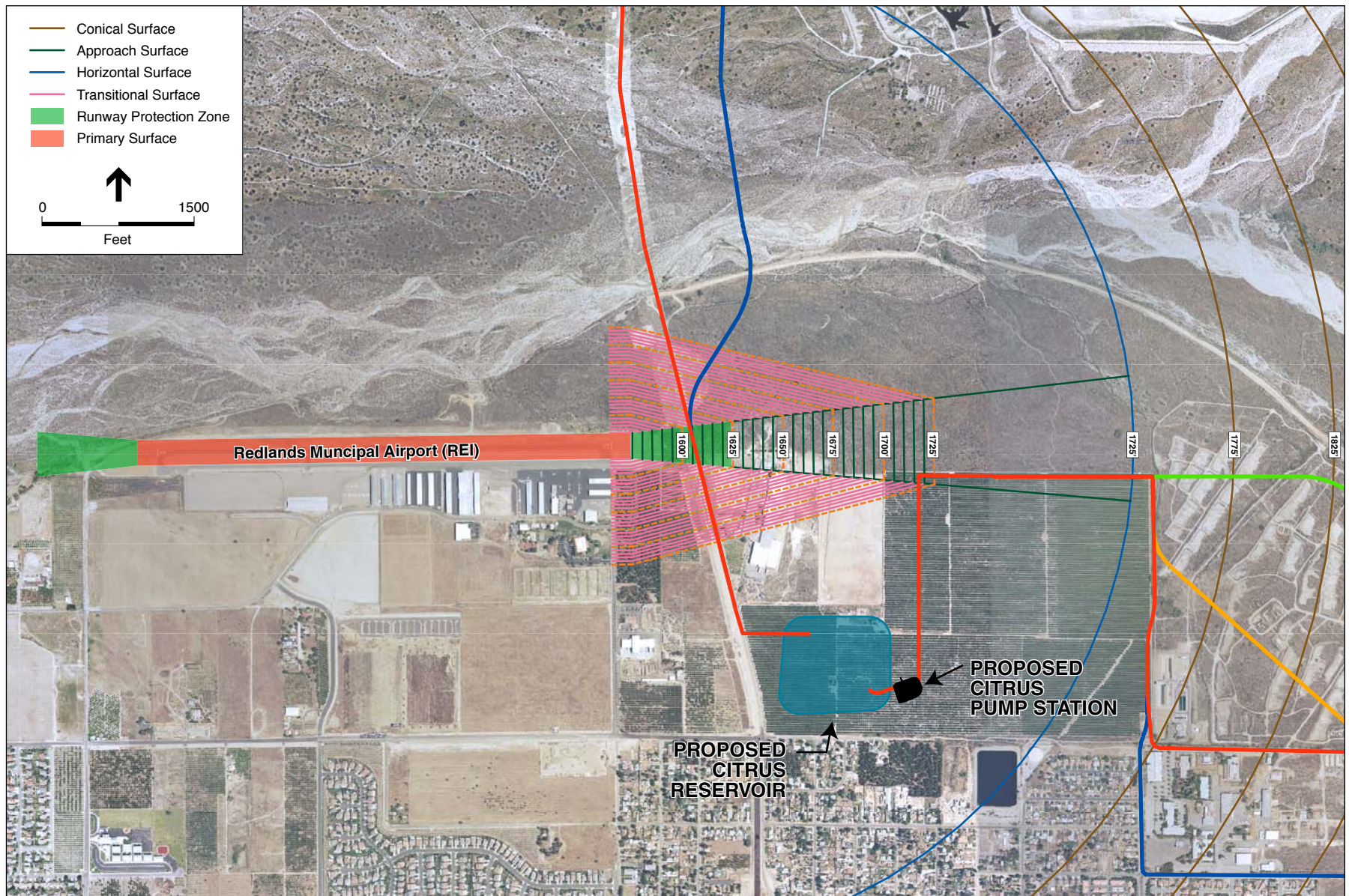
The proposed project facilities would pass through five of six safety zones, and all temporary and proposed facilities and equipment would be subject to FAA height restrictions. The results of the additional analyses are illustrated in Figures 3.8-3, **Figure 3.8-9**, **Figure 3.8-10**, and **Figure 3.8-11**, and summarized in **Table 3.8-3**.

The *Redlands Municipal Airport Master Plan* identifies plans to extend the existing runway approximately 650 feet. The ALP indicates that the runway would be extended in both an eastward and westward direction to total 650 additional feet. The 2005 ALP indicates that the first phase of runway expansion would extend the runway 200 feet to the east, bringing it closer to Opal Avenue. The RPZ, which is identified within as Zone A in the adopted ALUCP (see Figure 3.8-2) and as Zone 1 in the subsequent technical analysis (see Figures 3.8-3 and 3.8-9), would also shift 200 feet to the east to accommodate the extended runway. As shown on project figures, the portion of the pipeline adjacent to Opal Avenue would be installed within the RPZ.

Placement of the pipeline could affect airport operations. FAA recommends that the RPZ remain clear of objects and people to the greatest extent practicable, and any work or objects in the area would be subject to severe height restrictions (see Figures 3.8-9 and 3.8-11). Following construction, the pipeline would be located in an area that could be vulnerable to aircraft overruns. However, the DWR pipeline would be installed east of MWD's Inland Feeder pipeline, which is currently located less than 500 feet from the end of the runway. DWR's proposed pipeline would be installed at depths similar to the Inland Feeder pipeline. To avoid land use conflicts, DWR would either move the alternative alignment eastward approximately 150 feet to extend beyond the area proposed for the runway extension or design an encasement structure to withstand the potential effects of aircraft weight. All construction and maintenance activities would avoid significant impacts to airport land uses.

As shown on Figures 3.8-2, 3.8-3, 3.8-10 and 3.8-11, project components would be constructed in all compatibility zones identified in the ALUCP and in five of the six safety zones identified in the subsequent analysis. Height restrictions would apply to each of these zones. Construction activities within the RPZ have the greatest potential to disrupt airport operations. Construction equipment, particularly cranes and lights could pose air hazards to aviation, but restrictions will apply to all areas.

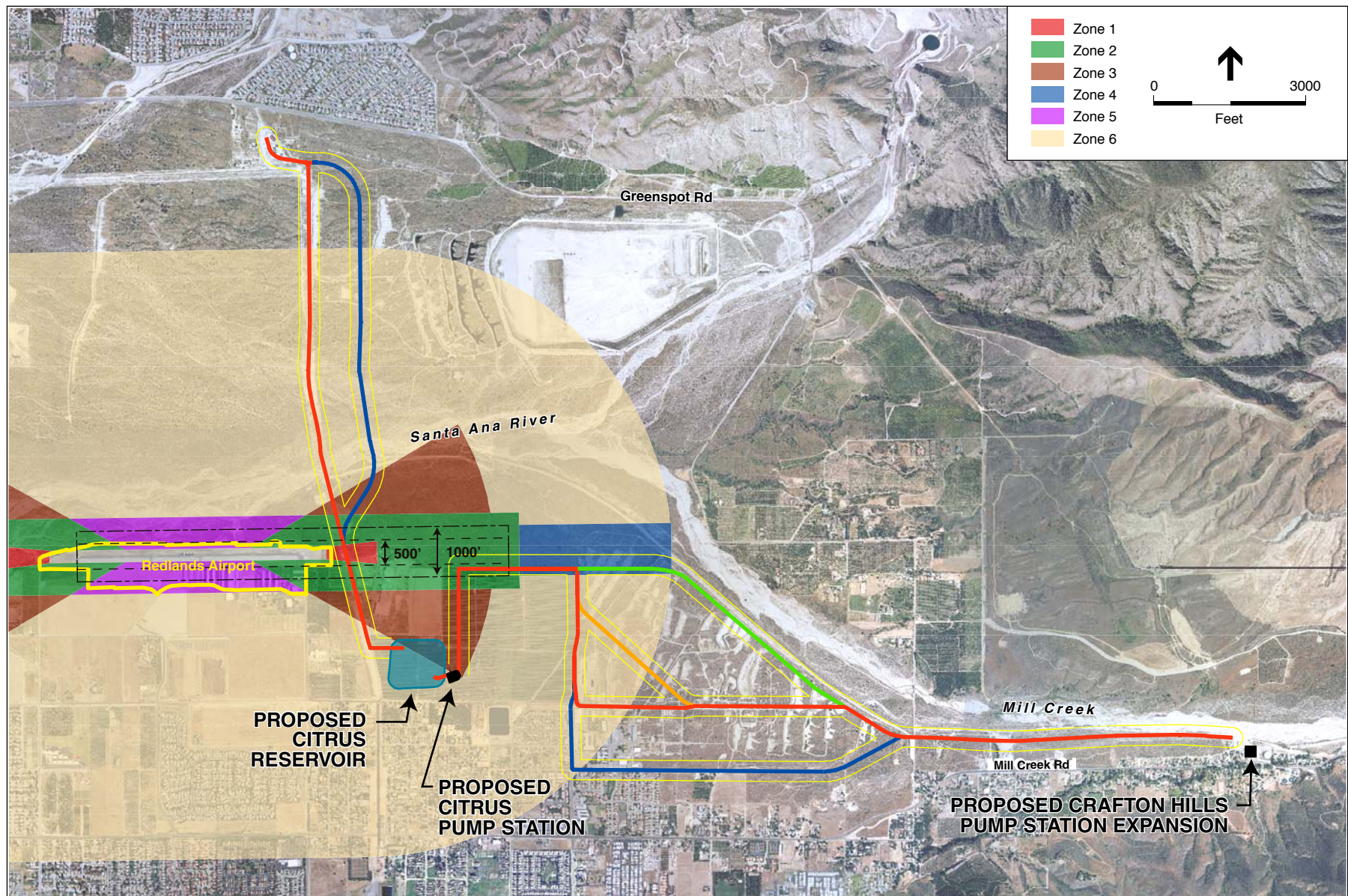
To prevent potential intrusions to navigable airspace, DWR will notify the airport of proposed construction activities in advance and participate in the FAA's 7460-I process to ensure that the proposed construction equipment does not pose hazards to aviation. Figures 3.8-9 and 3.8-11 show the allowable heights of objects amsl. The Master Plan and navigational charts identify the elevation of the east end of Runway as 1,574.2 feet amsl.



SOURCE: GlobeXplorer, 2007; City of Redlands, 2005; ESA 2008.

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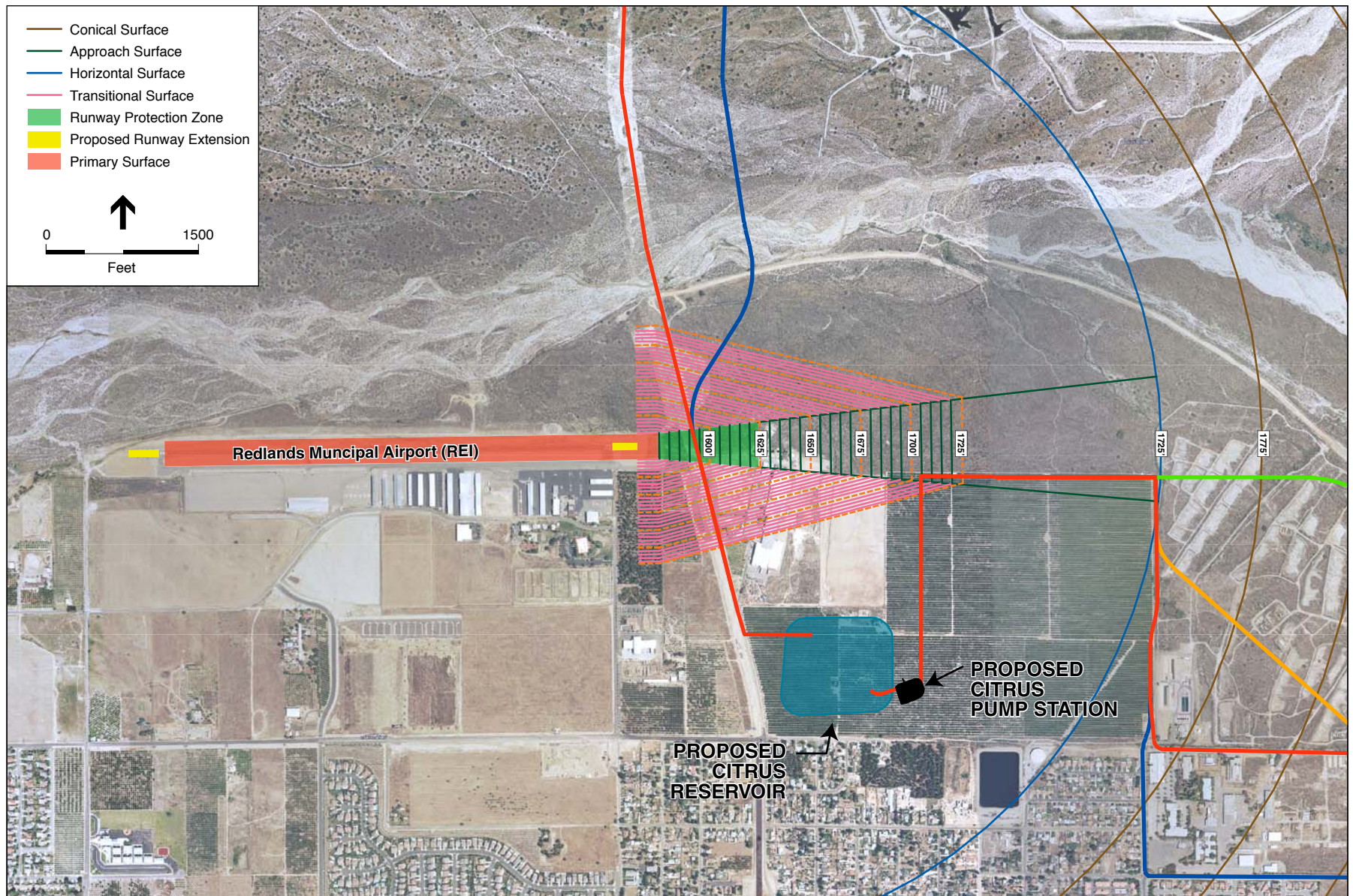
Figure 3.8-9
Protected Airspace: Existing Conditions



SOURCE: GlobeXplorer, 2007; City of Redlands, 2005; Caltrans, 2002; ESA 2008.

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Figure 3.8-10
Airport Safety Zones: Future Conditions



SOURCE: GlobeXplorer, 2007; City of Redlands, 2005; ESA 2008.

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Figure 3.8-11
Protected Airspace: Future Conditions

**TABLE 3.8-3
SUMMARY OF COMPATIBILITY ZONES AND CRITERIA
CURRENT AND FUTURE AIRPORT OPERATIONS**

Zone	Location/Description	Maximum Density	Prohibited Uses	Comments
1	RPZ as defined by FAA criteria. Begins 200 feet from runway end and extends 1,000 feet. Very high risk.	Residential: None Other uses: Very low densities (0 -10 persons per square acre) Open space: 100% open space recommended.	<ul style="list-style-type: none"> ▪ All new structures or objects prohibited ▪ Assemblages of people ▪ Objects exceeding FAR Part 77⁴ requirements ▪ Interference or hazards to flight (physical, visual, glare, electronic, thermal plumes), etc. ▪ Dedication of aviation easements 	<p>Pipeline would be installed beneath this area under both existing and extended runway conditions (all alternatives). See Figures 3.8-9 and 2.8-11.</p> <ul style="list-style-type: none"> ▪ Engineering designs should address weight-bearing capacity of pipeline trench to sustain aircraft weight in an emergency. ▪ FAR Part 77 height restrictions apply⁴ to permanent structures and temporary structures or construction equipment (see Figures 3.8-10 and 2.8-12). ▪ Construction and maintenance activities would require coordination with the airport, as the airport is open 24 hours/day. Coordination required prior to and during all construction activities.
2	Inner Approach/Departure Zone. Surrounds RPZ and extends 2,750 feet farther from runway end. Extends 750 feet from each side of runway centerline Substantial risk. RPZs together with inner approach/departure zones encompass 30% to 50% of near-airport aircraft accident sites. Encompasses areas overflowed at low altitudes - typically only 200 to 400 feet above runway elevation.	Residential: None Other uses: Very low densities (25-40 people per square acre) Open space: Preserve 30% of overall zone for open space ⁵	<ul style="list-style-type: none"> ▪ Children's schools², day care centers, hospitals, nursing homes prohibited ▪ Hazardous uses (e.g., aboveground bulk fuel storage³) prohibited ▪ Objects exceeding FAR Part 77⁴ requirements ▪ Interference or hazards to flight (physical, visual, glare, electronic, thermal plumes, etc.) 	<p>Pipeline would be installed beneath this area under both existing and extended runway conditions (all alternatives). See Figures 3.8-9 and 3.8-11.</p> <ul style="list-style-type: none"> ▪ Engineering designs should address weight-bearing capacity of pipeline trench to sustain aircraft weight in an emergency. ▪ FAR Part 77 height restrictions apply⁴ to permanent structures and temporary structures or construction equipment (see Figures 3.8-10 and 2.8-12). ▪ Construction and maintenance activities would require consideration and analysis, as the airport is open 24 hours/day. Coordination required prior to and during all construction activities.
3	Inner Turning Zone. Extends 6,000 feet from runway centerline with 20° angle. Encompasses locations where aircraft are typically turning from the base to final approach legs of the standard traffic pattern and are descending from traffic pattern altitude. Also includes the area where departing aircraft normally complete the	Residential: Limited, lower density use Other uses: Low densities (60-80 people per square acre) Open space: Preserve 20% of overall zone for open space ⁵	<ul style="list-style-type: none"> ▪ Children's schools², day care centers, hospitals, nursing homes prohibited ▪ Avoid hazardous uses (e.g., aboveground fuel storage) ▪ Objects exceeding FAR Part 77⁴ requirements 	<p>Pipeline and northeastern portion of the proposed reservoir would be constructed in this area under all alternatives. Under existing condition, approximately 30% of reservoir would occur within Zone 3 (see Figure 3.8-9). Following runway extension, approximately 20% of the reservoir would be within Zone 3. A small portion of the proposed pump station would be within Zone 3 following the proposed runway extension.</p>

**TABLE 3.8-3 (Continued)
SUMMARY OF COMPATIBILITY ZONES AND CRITERIA
CURRENT AND FUTURE AIRPORT OPERATIONS**

Zone	Location/Description	Maximum Density	Prohibited Uses	Comments
3 cont.	transition from takeoff to climb and begin to turn toward their en route heading.		<ul style="list-style-type: none"> Interference or hazards to flight (physical, visual, glare, electronic, thermal plumes, etc.) 	<ul style="list-style-type: none"> Potential to create wildlife hazards must be considered during design and operation, and complete coverage of open water is recommended. Engineering designs should address weight-bearing capacity of pipeline trench to sustain aircraft weight in an emergency. FAR Part 77 height restrictions apply⁴ to permanent structures and temporary structures or construction equipment. Construction and maintenance activities would require coordination with the airport, as the airport is open 24 hours/day. Coordination required prior to and during all construction activities.
4	<p>Outer Approach/Departure Zone. Extends 500 feet from Runway Centerline and extends 3,000 feet from Zone 4 (Rectangular area measuring 1,000 by 3,000 feet). Farther extension of runway centerline beyond Zone 3.</p> <p>Approaching aircraft usually at less than traffic pattern altitude.</p>	<p>Residential: Low to medium density uses.</p> <p>Other uses: For nonresidential uses density should be 60-80 people per square acre</p> <p>Open space: Preserve 20% of overall zone for open space⁵</p>	<p>Children's schools², large day care centers, hospitals, nursing homes prohibited</p>	<p>Pipeline would be installed beneath this area under all alternatives, and in existing and future runway conditions.</p> <ul style="list-style-type: none"> Engineering designs should address weight-bearing capacity of pipeline trench to sustain aircraft weight in an emergency. FAR Part 77 height restrictions apply⁴ to permanent structures and temporary structures or construction equipment (see Figures 3.8-10 and 2.8-12). Construction and maintenance activities would require coordination with the airport, as the airport is open 24 hours/day. Coordination required prior to and during all construction activities.
5	<p>Sideline Zone. Close-in area lateral to runways</p> <p>Area not normally overflowed; primary risk is with aircraft losing directional control on takeoff.</p>	<p>Residential: None</p> <p>Other uses: Limit non-residential uses similar to Zone 3. Density should be 80-100 people per square acre</p> <p>Open space: Preserve 30% of overall zone for open space⁵</p>	<p>Children's schools², large day care centers, hospitals, nursing homes prohibited</p> <p>Structures should be limited to aviation-related facilities and "through the fence" operations are discouraged</p> <p>Allow aviation-related activities if height limit criteria are met</p>	<p>No specific facilities are proposed in this area, but construction may require temporary use of the area.</p> <ul style="list-style-type: none"> FAR Part 77 height restrictions apply⁴ to permanent structures and temporary structures or construction equipment (see Figures 3.8-10 and 2.8-12). Construction and maintenance activities would require coordination with the airport, as the airport is open 24 hours/day. Coordination required prior to and during all construction activities.

TABLE 3.8-3 (Continued)
SUMMARY OF COMPATIBILITY ZONES AND CRITERIA
CURRENT AND FUTURE AIRPORT OPERATIONS

Zone	Location/Description	Maximum Density	Prohibited Uses	Comments
6	<p>Traffic Pattern Zone. Arc extends 6,000 feet from runway centerline and 10,000 feet from center point of the runway.</p> <p>Low likelihood of accident occurrence at most airports; risk concern primarily is with uses for which potential consequences are severe</p> <p>Zone includes all other portions of regular traffic patterns and pattern entry routes.</p>	<p>Residential: Avoid high-density use.</p> <p>Other uses: Density should be limited to less than 150 people per square acre</p>	None	<p>Pipeline and most of the proposed Citrus Reservoir, Citrus Pump Station, and pipelines would be constructed in Zone 6.</p> <ul style="list-style-type: none"> ▪ Potential to create wildlife hazards must be considered during design and operation, and complete coverage of open water is recommended. ▪ Engineering designs should address weight-bearing capacity of pipeline trench to sustain aircraft weight in an emergency. ▪ FAR Part 77 height restrictions apply⁴ to permanent structures and temporary structures or construction equipment (see Figures 3.8-10 and 2.8-12). ▪ Construction and maintenance activities would require coordination with the airport, as the airport is open 24 hours/day. Coordination required prior to and during all construction activities. Potential to create wildlife hazards must be considered and coverage of open water is recommended.

In addition to FAA airspace review, ongoing coordination with the airport will be required to ensure that proposed construction activities do not disrupt airport operations and to ensure that appropriate notice is provided to aviators using the airport. Although the airport operates on a 24-hour basis, most operations occur during daylight hours. DWR will coordinate construction schedules with airport staff to minimize effects to airport operations, and it is likely that most construction would occur during nighttime hours. The implementation of Mitigation Measures LU-3, LU-4, LU-5 and LU-6 would minimize these potential effects associated with construction activities and design issues.

As shown on Figures 3.8-9 and 3.8-11, both the proposed Citrus Reservoir and Citrus Pump Station would be constructed within the horizontal surface as defined by Federal Aviation Regulation (FAR) Part 77, "Object Affecting Navigable Airspace." FAA defines the horizontal surface as the airspace that extends 150 above the runway elevation (1,574.2 feet amsl). The ground elevations associated with the proposed project components have not been identified at this time to determine whether conflicts would occur, but the height of the proposed Citrus Pump Station would be approximately 30 feet above ground level, and the power poles from San Bernardino Avenue to the pump station would be approximately 60 feet above ground level. Mitigation Measures LU-6 would be incorporated to reduce the potential effect of the proposed project on navigable air space.

Mitigation Measures

LU-3: DWR shall either move the alternative alignment eastward of the planned runway extension, or include an encasement structure in the design of the project within the path of the proposed runway that would allow for a runway to be constructed over the pipeline in the future. The encasement structure would also provide necessary maintenance access.

LU-4: Prior to final design, DWR will submit its proposed project plans to the Airport Land Use Commission for review and comment.

LU-5: Prior to conducting construction activities within the Airport Influence Area, DWR shall prepare an airport construction safety plan that identifies best management practices for use within each Zone identified in the Airport Land Use Compatibility Plan. For proposed construction within the Runway Protection Zone (Zone A), the Plan shall include, at a minimum, construction timeframes and hours, lighting and flagging requirements, air traffic control communication requirements, access and egress restrictions, equipment staging area requirements, personal safety equipment requirements for construction workers, and appropriate notification to aviators. The plan will be approved by the City of Redlands.

LU-6: Prior to final design, DWR shall identify the ground elevation associated with each project component and submit its project plans to airport staff for review and comment. DWR shall submit its design plans for airspace analysis (FAA Part 7460-l review) to determine whether any of the proposed project components will protrude into protected airspace. If such objects are identified, DWR, airport staff, and FAA will identify appropriate steps to adjust project plans or include appropriate markings to identify hazards to aviators pursuant to FAA Part 7460-l.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measures LU-3, LU-4, and LU-5 would the potential effects associated with construction activities and design issues of the proposed project. Implementation of Mitigation Measures LU-6 would reduce the potential effect of the proposed project on navigable air space.

3.8.3.6 Effects on Aviation and Wildlife Hazards

This section discusses the following significance threshold question:

Would the project conflict existing policies set forth by the City or FAA regarding wildlife hazard management?

Significance Threshold

The project would have a significant impact if it is inconsistent with the Wildlife Hazard Management policies set forth by FAA or the ALUCP.

Impact Analysis

The Citrus Reservoir is located approximately 0.5 mile from aircraft operation areas and within Zones B1, B2, and D as designated by the ALUCP. The airport is currently adjacent to the Santa Ana River, Opal Avenue, San Bernardino Avenue, several agricultural fields, and open space. The proposed project would not include noise sensitive land uses that would be incompatible with Zone B1.

FAA AC 150/5200-33B states new open water facilities should not be developed within 10,000 feet of aircraft operation areas for airports serving turbine-powered (jet) aircraft, because the open water can attract potentially hazardous wildlife and pose risks to aviators (refer back to Figure 3.8-1). No bird strike data was available from the airport. The FAA suggests that airports prepare WHMP to monitor, evaluate, and mitigate hazards associated with land uses surrounding the airport. The potential hazards associated with the Citrus Reservoir would be reduced to less-than-significant levels with the implementation of Mitigation Measure LU-7. With design features and a mitigation plan in place that adequately reduce the hazard, the proposed project would be compatible with the ALUCP.

Mitigation Measures

LU-7: DWR shall reduce the potential attraction of its proposed facilities to wildlife through project design features, and ongoing monitoring as described below:

- DWR shall incorporate wildlife deterrent design measures to minimize attracting wildlife. Measures could include installation of a wire grid over the proposed reservoir as well as other mechanical means of deterring avian wildlife.

- DWR shall coordinate with the City of Redlands to develop a Wildlife Hazard Management Plan for the Citrus Reservoir pursuant to FAA guidelines. At a minimum the Plan would include maintenance, monitoring, and reporting requirements.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measure LU-7, requiring wildlife deterrent design measures and a Wildlife Hazard Management Plan, would ensure that the proposed project does not conflict with existing policies set forth by the FAA and the ALUCP regarding wildlife hazard management.

3.8.3.7 Effects on Population and Housing

This section discusses the following CEQA Checklist question:

Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Significance Threshold

The project would have a significant impact if it displaced substantial numbers of housing or people, requiring the construction of replacement housing elsewhere.

Impact Analysis

The Citrus Reservoir and Citrus Pump Station would be located within the boundaries of an existing citrus orchard. The Crafton Hills Pump Station Expansion would be located within the footprint of the existing Crafton Hills Pump Station and the pipelines would be located underground. Therefore, the project components would not displace existing housing or people.

Mitigation Measures

None required.

Significance Conclusion

No impact. The proposed project would not displace existing housing or people.

3.8.3.7 Mitigation Measures Summary Table

Table 3.8-4 presents the impacts and mitigation summary for Land Use and Planning.

**TABLE 3.8-4
IMPACTS AND MITIGATION SUMMARY**

Proposed project Impact	Mitigation measure	Significance after mitigation
Divide an Established Community: Project implementation would not divide an established community.	None required	No impact
Consistency with Land Use Plans: The proposed project would be consistent with local land use plans, policies, regulations, and zoning ordinances with implementation of mitigation measures.	LU-1 and LU-2	Less than significant
Effects to Agricultural Areas and Farmland: The proposed project would have a less-than-significant impact on the conversion of farmland.	None required	Less than significant
Effects to Recreational Facilities: The proposed project would have a less-than-significant impact on recreational facilities.	None required	No impact
Effects on Airport Operations: The proposed project would have a less-than-significant impact on airport operations with implementation of mitigation measures.	LU-3 through LU-6	Less than significant
Effects on Aviation and Wildlife Hazards: The proposed project would have a less-than-significant impact on the Airport Land Use Compatibility Plan including wildlife management plans with implementation of mitigation measures.	LU-7	Less than significant
Effects on Population and Housing: The proposed project would have a less-than-significant impact on population and housing.	None required	No impact

3.9 Noise and Vibration

This section provides an overview of the regulatory framework, the existing noise environment at the proposed project site and surrounding area, and an analysis of potential noise impacts that would result from implementation of the proposed project, and mitigation measures where appropriate.

3.9.1 Regulatory Framework

3.9.1.1 Federal

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 Code of CFR, Part 205, Subpart B. The federal truck pass-by noise standard is 80 dBA (A-weighted decibels) at 15 meters from the vehicle pathway centerline. These standards are implemented through regulatory controls on truck manufacturers.

Table 3.9-1 summarizes significance thresholds assumed for permanent nuisance noise. The thresholds are derived from the 1992 findings of the Federal Interagency Committee on Noise (FICON), which assessed the annoyance effects of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a summary measure of the general adverse reaction of people to noise that generates speech interference, sleep disturbance, or interference with the desire for a tranquil environment. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been asserted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the Day-Night Noise Level (Ldn).

**TABLE 3.9-1
MEASURES OF SUBSTANTIAL INCREASE FOR NOISE EXPOSURE**

Ambient Noise Level Without Project (Ldn)	Significant Impact Assumed to Occur if the Project Increases Ambient Noise Levels By:
<60 dB	+ 5.0 dB or more
60-65 dB	+ 3.0 dB or more
>65 dB	+ 1.5 dB or more

SOURCE: Federal Interagency Committee on Noise (FICON), 1992.

The rationale for the Table 3.9-1 criteria is that, as ambient noise levels increase, a smaller increase in decibels can result in significant annoyance. At lower decibel levels (i.e., below 60), the decibel level can increase more without causing significant annoyance.

3.9.1.2 State

California Code of Regulations has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure, as shown in **Figure 3.9-1** below. The State of California also establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State pass-by standard is consistent with the federal limit of 80 dBA at 15 meters. The State pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dBA at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanction of vehicle operators by state and local law enforcement officials.

3.9.1.3 Local

San Bernardino Development Code 83.01.080 – Noise

Noise Standards. Table 3.9-2 (Noise Standards for Stationary Noise Sources) describes the noise standard for emanations from a stationary noise source, as it affects adjacent properties.

Exempt noise. The following sources of noise shall be exempt from the regulations of this Section:

- Motor vehicles not under the control of the commercial or industrial use.
- Emergency equipment, vehicles, and devices.
- Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and federal holidays.

**TABLE 3.9-2
SAN BERNARDINO COUNTY NOISE STANDARDS FOR STATIONARY NOISE SOURCES**

Affected Land Uses (Receiving Noise)	Daytime Leq (7 am – 10 pm)	Nighttime Leq (10 pm – 7 am)
Residential	55 dBA	45 dBA
Professional Services	55 dBA	55 dBA
Other Commercial	60 dBA	60 dBA
Industrial	70 dBA	70 dBA

Leq = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time varying signal over a given sample period, typically 1, 8 or 24 hours.

dB(A) = (A-weighted Sound Pressure Level). The sound pressure level, in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitivity range of the human ear.

Ldn = (Day-Night Noise Level). The average equivalent A-weighted sound level during a 24-hour day obtained by adding 10 decibels to the hourly noise levels measured during the night (from 10 pm to 7 am). In this way Ldn takes into account the lower tolerance of people for noise during nighttime periods.

SOURCE: San Bernardino Development Code

FIGURE 3.9-1

LAND USE CATEGORY		COMMUNITY NOISE EXPOSURE - Ldn or CNEL (dBA)							
		50	55	60	65	70	75	80	
Residential – Low Density Single Family, Duplex, Mobile Home									
Residential – Multi-Family									
Transient Lodging – Motel/Hotel									
Schools, Libraries, Churches, Hospitals, Nursing Homes									
Auditorium, Concert Hall, Amphitheaters									
Sports Arena, Outdoor Spectator Sports									
Playgrounds, Neighborhood Parks									
Golf Courses, Riding Stables, Water Recreation, Cemeteries									
Office Buildings, Business, Commercial and Professional									
Industrial, Manufacturing, Utilities, Agriculture									

SOURCE: State of California, Governor's Office of Planning and Research, 1998. *General Plan Guidelines*.

City of Redlands Noise Ordinance

The Noise Ordinance is found in the Municipal Code, Chapter 8.06: Community Noise Control. Noise Ordinance sections applicable to the proposed project are provided in **Table 3.9-3**. The Noise Ordinance (Section 8.06.120 Exemptions) includes the following exemptions:

Construction Activity: This chapter shall not apply to noise sources associated with new construction, remodeling, rehabilitation or grading of any property provided such activities take place between the hours of seven o'clock (7:00) A.M. and six o'clock (6:00) P.M. on weekdays, including Saturdays, with no activities taking place at any time on Sundays or federal holidays. All motorized equipment used in such activity shall be equipped with functioning mufflers.

**TABLE 3.9-3
CITY OF REDLANDS MAXIMUM PERMISSIBLE SOUND LEVELS BY RECEIVING LAND USE**

Receiving Land Use Category	Time Period	Noise Level – dBA
Single-family residential districts	10 p.m. – 7 a.m.	50
	7 a.m. – 10 p.m.	60
Multi-Family residential districts; public space; institutional	10 p.m. – 7 a.m.	50
	7 a.m. – 10 p.m.	60
Commercial	10 p.m. – 7 a.m.	60
	7 a.m. – 10 p.m.	65
Industrial	Any time	75

SOURCE: ESA, 2007

City of Highland Noise Ordinance

The Noise Ordinance is found in the Municipal Code, Chapter 8.50: Noise Control. Noise Ordinance sections applicable to the proposed project are provided below.

Table 3.9-4 outlines noise standards that, unless otherwise specifically indicated, shall apply to all receptor properties within the designated noise zones:

The Noise Ordinance (Section 8.50.100 Exemptions) includes the following exemptions: Noise sources associated with the construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, provided such activities do not take place between the hours of 6:00 p.m. and 7:00 a.m. on weekdays, including Saturdays, or at any time on Sunday or a federal holiday, and provided the noise level created by such activities does not exceed the noise standard of 70 dBA plus the limits specified in Highland Municipal Code 8.50.080 as measured on residential property and does not endanger the public health, welfare, and safety.

TABLE 3.9-4
CITY OF HIGHLAND MAXIMUM PERMISSIBLE SOUND LEVELS BY RECEIVING LAND USE

Receiving Land Use Category	Time Period	Noise Level – dBA
Single-family, two-family, or multiple-family residential	10 p.m. – 7 a.m.	55
	7 a.m. – 10 p.m.	60
Ag/Eq	10 p.m. – 7 a.m.	60
	7 a.m. – 10 p.m.	65
Commercial	10 p.m. – 7 a.m.	65
	7 a.m. – 10 p.m.	70
Manufacturing, Industrial, or Open space	Any time	75

SOURCE: ESA, 2007

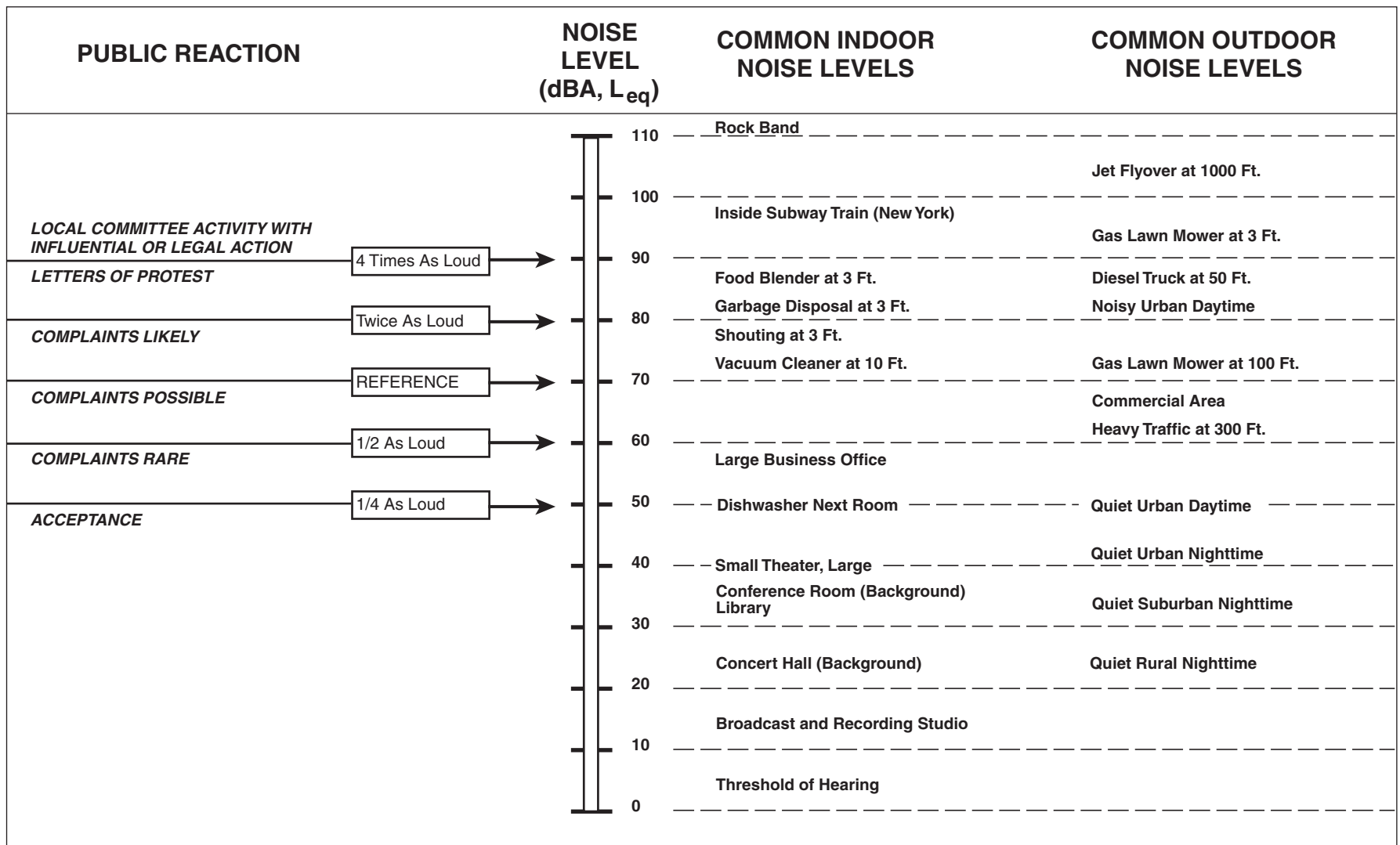
3.9.2 Environmental Setting

3.9.2.1 Noise Principles and Descriptors

Noise is defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequency spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ears decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown in **Figure 3.9-2**.



SOURCE: ESA, 2007

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Figure 3.9-2
Effect of Noise on People

3.9.2.2 Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. The noise levels presented in Figure 3.9-2 are representative of measured noise at a given instant in time, however, they rarely persist consistently over a long period of time. Rather, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment varies the community noise level from instant to instant requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

- L_{eq} : the equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).
- L_{max} : the instantaneous maximum noise level for a specified period of time.
- L_{50} : the noise level that is equaled or exceeded 50 percent of the specified time period. The L_{50} represents the median sound level.
- L_{90} : the noise level that is equaled or exceeded 90 percent of the specified time period. The L_{90} is sometimes used to represent the background sound level.
- DNL : 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night.

("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.
- $CNEL$: similar to the DNL the Community Noise Equivalent Level ($CNEL$) adds a 5-dBA "penalty" for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

As a general rule, in areas where the noise environment is dominated by traffic, the L_{eq} during the peak-hour is generally equivalent to the DNL at that location (Caltrans, 1998).

3.9.2.3 Effects of Noise on People

The effects of noise on people can be placed into three categories:

- subjective effects of annoyance, nuisance, dissatisfaction;
- interference with activities such as speech, sleep, learning; and
- physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted the so called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- a change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- a 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA the combined sound level would be 53 dBA, not 100 dBA.

3.9.2.4 Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a

rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans, 1998).

3.9.2.5 Fundamentals of Vibration

As described in the Federal Transit Administration's Transit Noise and Vibration Impact Assessment (FTA, 2006), ground-borne vibration can be a serious concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving and operating heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Soil types influence vibration attenuation with loose, unconsolidated soils attenuating vibration more rapidly than more dense clays and bedrock. Sensitive receptors for vibration include structures (especially older masonry structures), people (especially residents, the elderly and sick), and vibration sensitive equipment.

The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for normal buildings. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 in/sec PPV and the FTA threshold of human annoyance to ground-borne vibration is 80 RMS (FTA, 2006).

Vibration propagates according to the following expression, based on point sources with normal propagation conditions:

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

Where PPV (equip) is the peak particle velocity in in/sec of the equipment adjusted for distance, PPV (ref) is the reference vibration level in in/sec at 25 feet, and D is the distance from the equipment to the receiver. The PPV is defined as the maximum instantaneous positive or negative

peak of the vibration and is often used in monitoring of vibration because it is related to the stresses experienced by structures. In order to determine potential for annoyance, the RMS vibration level (L_v) at any distance (D) can be estimated based on the following equation:

$$L_v(D) = L_v(25 \text{ ft}) - 30 \log(D/25)$$

3.9.2.6 Project Area Setting

The noise environment in proposed project area is influenced primarily by agricultural operations, traffic on local roadways, and aircraft. Noise levels away from these noise sources can be quite low depending on the amount of nearby human activity.

Ambient noise levels were measured at the Crafton Hills Pump Station using Metrosonics Model db308 sound level meters. The meters were calibrated to ensure the accuracy of the measurements. Eight short-term noise level measurements were taken near the Crafton Hills Pumps Station to evaluate existing noise attributable to the pump station. The noise measurement results are presented below in **Table 3.9-5**.

**TABLE 3.9-5
EXISTING NOISE ENVIRONMENTS AT PROJECT LOCATION**

Location	Time Period	Leq (dB)	Noise Sources
Short-term Location 1: Inside building	5 Minutes 6/19/07 10:12	85.6	Center of 3 pumps all pumping ~ 85
Short-term Location 1: Inside building	5 Minutes 6/19/07 10:17	86.1	Center of 3 pumps all pumping ~ 85
Short-term Location 1: Inside building	5 Minutes 6/19/07 10:22	86.1	Center of 3 pumps all pumping ~ 85
Short-term Location 2: Near open door	5 Minutes 6/19/07 10:28	82.4	Pumping 82 dBA
Short-term Location 3: 50' from open door, 100' from road	5 Minutes 6/19/07 10:40	58.8	Traffic ~ 60 – 65 Pumping 59 dBA
Short-term Location 4: 50' from closed door, 100' from road	5 Minutes 6/19/07 10:46	55.7	Traffic ~ 56 – 67 Pump ~ 47 dBA
Short-term Location 5: 88' from closed door	5 Minutes 6/19/07 10:52	55.4	Traffic ~ 55 – 64 Pumping ~ 47 dBA
Short-term Location 6: 88' from open door	5 Minutes 6/19/07 11:00	57.4	Traffic ~ 57 – 60 Pumping ~ 55 dBA

SOURCE: ESA, 2007

As shown in Table 3.9-5, the ambient noise near the existing Crafton Hills Reservoir is influenced by the operation of water pumps. Fifty feet from the pump station with and without the door closed, traffic noise has a greater effect on ambient noise than the pumps. These measured noise levels attributable to the pumps are expected to be similar to the noise produced from the proposed Citrus Pump Station since the building construction techniques and the pumps would be

similar. However, traffic noise in the proposed location of the Citrus Pump Station is not expected to contribute as much to the ambient noise in the area.

Ambient noise levels in other areas of the project experience less noise from traffic. Daytime ambient noise levels in the residential areas on San Bernardino Avenue are lower since they are farther from Highway 38. Nighttime ambient noise levels in the Santa Ana River wash can be less than 40 dBA. In this area, aircraft noise during the day and night contribute the most noise in the area.

3.9.2.7 Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others because of the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, hotels, schools, rest homes, and hospitals are generally more sensitive to noise than commercial and industrial land uses. The closest sensitive receptors to components of each alternative alignment are described below. (See Figure 3.2-1 for location of residences closest to the construction zone.)

Alternative Alignment 1: The closest sensitive receptors to Alternative Alignment 1 are residences approximately 25 feet east of Cone Camp Road north of the Santa Ana River and the Valley Star High School at 9355 Opal Avenue, approximately 75 feet east of the proposed pipeline route. Redlands Unified School District, Mentone Elementary School is located at 1320 Crafton Avenue near Madeira Avenue. The Mentone Library and Senior Center is located at 1331 Opal Ave. Three additional schools are located along the truck route on San Bernardino Avenue to Orange Street: Clement Middle School at 501 E. Pennsylvania Ave, Lugonia Elementary at 202 E. Pennsylvania Ave, and Judson and Brown Elementary at 1401 E. Pennsylvania Ave. A pediatrics center is located at 1711 Orange Street along the proposed truck haul route.

Alternative Alignment 2: The closest sensitive receptors to Alternative Alignment 2 include those identified for Alternative Alignment 1 as well as residences approximately 15 feet east and west of Crafton Avenue and south on Madeira Avenue.

Alternative Alignment 3: The closest sensitive receptors to Alternative Alignment 3 includes those identified for Alternative Alignment 1 as well as residences located 1,000 feet north, across the Mill Creek streambed.

Alternative Alignment 4: The closest sensitive receptors to Alternative Alignment 4 include those identified for Alternative Alignment 1 as well as residences at the northwestern end of Crafton Avenue, approximately 1,500 feet away.

Citrus Reservoir: The closest sensitive receptors to the Citrus Reservoir are residences on San Bernardino Avenue approximately 250 feet to the south. Three additional schools are located along the truck route on San Bernardino Avenue to Orange Street: Clement Middle School at 501 E. Pennsylvania Ave, Lugonia Elementary at 202 E. Pennsylvania Ave, and Judson and

Brown Elementary at 1401 E. Pennsylvania Ave. A Pediatrics center is located at 1711 Orange Street along the proposed truck haul route; refer to Figure 3.2-1.

An alternate truck route along East Lugonia Avenue, Tennessee Street, SR 30, Greenspot Road, and Orange Street includes residential sensitive receptors. However, Lugonia is a designated truck haul route through the City of Redlands so increased noise from trucks is a common occurrence.

Citrus Pump Station: The closest sensitive receptors to the Citrus Pump Station are residences on San Bernardino Avenue, approximately 500 feet to the southwest.

Crafton Hills Pump Station Expansion: The closest sensitive receptor to the existing pump station is a residence about 85 feet west of an existing sound wall.

3.9.3 Impact Assessment

The proposed project's potential impacts were assessed using the *CEQA Guidelines* Appendix G Checklist and an increase in ambient noise threshold established by the Federal Interagency Committee on Noise (FICON). The following sections discuss the key issue areas identified in the *CEQA Guidelines* with respect to the project's potential effect to the noise environment. Significance thresholds are identified and a significance conclusion is made following the discussion.

3.9.3.1 Noise Standards

This section discusses the following CEQA Checklist questions:

Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Significance Threshold

The proposed project would result in a significant impact if construction activity would occur outside of the daytime hours permitted by the county's or city's noise ordinance or if the construction noise resulted in a noise level that is above the maximum conditionally acceptable noise level for a particular land use category, as described in Figure 3.9-1.

Impacts Analysis

Construction activity noise levels at and near the construction areas would fluctuate depending on the particular type, number, and duration-of-use of various pieces of construction equipment. The duration of construction activities would vary by component. Installation of the pipeline would proceed at approximately 80 feet per day with construction activities in any given area occurring for approximately four or five weeks. The pipeline is expected to take up to two years to complete. Construction of the reservoir could take up to three years.

Certain types of construction equipment generate impact noises (such as pile driving) which can be unpleasant to sensitive receptors. Pile driving for trench shoring may be used. **Table 3.9-6** shows typical noise levels during different construction stages. **Table 3.9-7** shows typical noise levels produced by various types of construction equipment.

**TABLE 3.9-6
TYPICAL CONSTRUCTION NOISE LEVELS**

Construction Phase	Noise Level (dBA, Leq) ^a
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

^a Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, 1971.

**TABLE 3.9-7
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT**

Construction Equipment	Noise Level (dBA, Leq at 50 feet)
Dump Truck	88
Portable Air Compressor	81
Concrete Mixer (Truck)	85
Scraper	88
Jack Hammer	88
Dozer	87
Paver	89
Generator	76
Pile Driver	101
Backhoe	85

SOURCE: Cunniff, Environmental Noise Pollution, 1977.

Construction of the proposed project could generate a significant amount of noise corresponding to the phase of construction and the noise generating equipment used during those phases. The closest sensitive receptors would be those described in the setting section and other sensitive receptors in the study area vicinity would be exposed to construction noise at incrementally lower levels due to noise attenuation. Noise from construction activities generally attenuates at a rate of 4.5 to 7.5 dBA per doubling of distance. Construction noise at the nearest receptors is analyzed below for each project component with an assumed conservative attenuation rate of 4.5 dBA per doubling distance. Should an alternative alignment be selected that would be located in front of residences, they could be exposed to trenching activities for a four week period.

Alternative Alignment 1

Alternative Alignment 1 is closest to sensitive receptors near the north end of Cone Camp Road and Valley Star High School on Opal Avenue at distances of about 25 and 75 feet, respectively. Excavation activities and general construction site access would generate substantial amounts of noise during the construction period. In particular, excavation equipment operating consistently within 25 feet of residences would generate a substantial amount of noise. For pipeline construction occurring 25 feet from noise-sensitive land uses, the sensitive receptors would potentially be exposed to 89 dBA Leq during excavation. Construction activities would begin and end at times consistent with the City of Redlands Noise Ordinance. After each day of construction, the equipment would move farther away from the residences, providing a distance buffer that would attenuate the sound. The construction activities would occur about 75 feet from Valley Star High School. The receiving noise level would be about 84 dBA Leq during excavation activities at 75 feet. These noise levels exceed 70 dBA, the maximum conditionally acceptable noise level for these land uses. Even with the implementation of Mitigation Measures N-1 through N-3, impacts would be significant and unavoidable.

Nighttime construction may occur along this alternative alignment when the pipeline is installed east of the Redlands Airport runway and during the Santa Ana River Crossing. Construction at night is necessary to minimize the extent of time construction equipment is within Zone A of the Redlands Municipal Airport Land Use Plan, to minimize interruptions to the operations at Seven Oaks Dam, and to minimize the duration and need for water diversion and dewatering during the Santa Ana River channel crossing. Construction would occur during the day at all other construction locations of the proposed project.

Nighttime ambient noise levels near the airport and river wash are very low (below 45 dBA) and far from residential properties. Should nighttime construction occur, the nearest inhabited sensitive receptors would be students at Valley Star High School, assuming night classes occurred and residences approximately 2,800 feet south of the runway. The school is approximately 700 feet away from the area where nighttime construction may occur.

Night construction would conflict with the city and county noise ordinances which prohibit construction after 7 PM in the county and after 6 PM in the City of Redlands. Noise levels for excavation activities would attenuate at an assumed rate of 4.5 dBA per doubling in distance. Thus, the level of noise experienced at 2,800 feet away would be approximately 55 dBA which exceeds the nighttime noise threshold of 45 dBA. Valley Star High School, about 700 feet away, would experience a noise level of approximately 74 dBA. Based on the identified significance thresholds, nighttime construction would be considered a significant and unavoidable impact of the project.

Alternative Alignment 2

Similar to Alternative Alignment 1, Alternative Alignment 2 is close to sensitive receptors near the north end of Cone Camp Road and Valley Star High School on Opal Avenue at distances of about 25 and 75 feet, respectively. Nighttime construction during the river crossing along this alternative alignment would result in a slightly greater distance between the sensitive receptors and the construction activities, compared to Alternative Alignment 1. Nighttime construction at

the end of the airport runway would result in the same level of noise impacts as Alternative Alignment 1. Nighttime construction would result in a significant and unavoidable impact of the project.

Daytime construction along Alternative Alignment 2 comes within 15 feet of sensitive receptors along Crafton Avenue and Madeira Avenue. For pipeline construction occurring 15 feet from noise-sensitive land uses, the sensitive receptors would potentially be exposed to 101 dBA Leq if pile driving is used during excavation. These noise levels exceed 70 dBA, the maximum conditionally acceptable noise level for these land uses. Construction activities within Crafton and Madeira Avenues would result in significant and unavoidable noise impacts.

Alternative Alignment 3

Alternative Alignment 3 comes within 1,000 feet of sensitive receptors. For pipeline construction occurring 1,000 feet from noise-sensitive land uses, the sensitive receptors would be exposed to approximately 70 dBA Leq during excavation assuming a direct line of sight over flat terrain which would attenuate noise at 4.5 dBA per doubling distance.

Pipeline excavation would occur within the groundwater recharge basins along this reach. There is an elevated roadway that parallels the levee, which was constructed eight feet above the roadway. With the excavation occurring in the basins, the roadway and levee elevation would act as a sound attenuating barrier that would block the direct line of sight to the sensitive receptors across Mill Creek. Due to the distance between the receptors and the noise source combined with the noise attenuating features of the road and levee elevation, noise levels experienced at the sensitive receptors across Mill Creek from Alternative Alignment 3 would be less than 70 dBA. The noise level experienced at these sensitive receptors would not exceed 70 dBA, the maximum conditionally acceptable noise level for these land uses. Construction along this reach would result in a less-than-significant impact. Mitigation Measures N-1 through N-3 would still be required.

Similar to Alternative Alignments 1 and 2, nighttime construction at the end of the airport and during the Santa Ana River crossing would be a significant and unavoidable impact of the project.

Alternative Alignment 4

Alternative Alignment 4 comes within about 1,500 feet of sensitive residential receptors at the northwestern end of Crafton Avenue. For excavation activities occurring 1,500 feet from noise-sensitive land uses, the sensitive receptors would be exposed to approximately 68 dBA, assuming a direct line of sight over flat terrain which would attenuate noise at 4.5 dBA per doubling distance. This noise level would not exceed 70 dBA, the maximum conditionally acceptable noise level for this land uses. Construction along this reach would result in a less-than-significant impact. Mitigation Measures N-1 through N-3 would still be required.

Similar to Alternative Alignments 1 and 2, nighttime construction at the end of the airport and during the Santa Ana River crossing would be a significant and unavoidable impact of the project.

Citrus Reservoir

The Citrus Reservoir lies about 250 feet north of sensitive receptors on San Bernardino Avenue. For construction occurring 250 feet from noise-sensitive land uses, the sensitive receptors would be exposed to approximately 79 dBA Leq during excavation. As excavation progressed, a depression would be created and the equipment would begin to be shielded by the walls of the depression. The shielding provided by the excavated depression would serve as a sound barrier to residences to the south and the noise levels would be reduced over the construction phase. However, the initial construction noise would be greater than 70 dBA, the maximum conditionally acceptable noise level for this land use. Impacts would be significant and unavoidable. Mitigation Measures N-1 through N-3 would be required.

DWR has indicated that about 200,000 of the 1.8 million cubic yards of excavated material would be screened and sorted on site. The screening process could be completed by several different methods. Generally, the process would require a front-end loader, backhoe, or excavator to lift buckets of material onto a rock screen, where the material is sorted through the screens. A portable processing and crushing unit may also be used to sort materials. Regardless of the specific method used, this process would contribute to the noise generated by the construction activities and would be a factor in the significant and unavoidable construction noise impact.

Another source of construction related noise would result from the citrus tree removal and chipping. Approximately 35 acres of trees would be removed to accommodate the reservoir and pump station. Removal and processing of the trees could involve the use of chain saws and heavy equipment to uproot the trees. The removed trees could then be chipped onsite. This process would contribute to the noise generated by the construction activities and would be a factor in the significant and unavoidable construction noise impact.

Citrus Pump Station

The Citrus Pump Station lies about 500 feet from sensitive receptors on San Bernardino Avenue. For construction occurring 500 feet from noise-sensitive land uses, the sensitive receptors would be exposed to approximately 75 dBA Leq during excavation. This noise level exceeds 70 dBA, the maximum conditionally acceptable noise level for this land uses. Mitigation Measures N-1 through N-3 would be required.

Crafton Hills Pump Station Expansion

The Crafton Hills Pump Station lies about 85 feet east from the nearest residence. For construction occurring 85 feet from noise-sensitive land uses, the sensitive receptors would be exposed to approximately 87 dBA Leq during excavation, assuming a direct line of sight over flat terrain which would attenuate noise at 4.5 dBA per doubling distance. There is an existing sound wall at the property boundary. This wall may attenuate up to 10 dBA of construction noise by blocking the direct line of site between the source and receptor. Even with 10 dBA of attenuation, the noise level experienced at the nearest sensitive receptor would be greater than 70 dBA, the maximum conditionally acceptable noise level for this land use. Impacts would be significant and unavoidable. Mitigation Measures N-1 through N-3 would be required.

Cherry Valley Pump Station

This project component would include the installation of one new pump within the existing building. There would be no noise impacts to sensitive receptors associated with the Cherry Valley Pump Station.

Mitigation Measures

N-1: DWR shall ensure that the construction contractor avoids noise sensitive hours as follows:

- Construction activities within unincorporated San Bernardino County shall be limited to between 7:00 a.m. and 7:00 p.m., Monday through Saturday, and not permitted Sundays and federal holidays.
- Construction activities within the City of Highland and City of Redlands shall be limited to between 7:00 a.m. and 6:00 p.m., Monday through Saturday, and not permitted Sundays and federal holidays except in the pipeline construction corridor adjacent to the Redlands Municipal Airport and within the active Santa Ana River channel.

N-2: DWR shall require construction contractors to minimize nuisance construction noise by implementing the following measures:

- Signs shall be posted at the construction sites that include permitted construction days and hours and a day and evening contact name and number for the job site.
- An onsite complaint and enforcement manager shall respond to and track complaints and questions related to noise.

N-3: DWR shall require construction contractors to minimize construction noise by implementing the following measures:

- During construction, the contractor shall outfit all equipment, fixed or mobile, with properly operating and maintained exhaust and intake mufflers, consistent with manufacturers' standards.
- Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used. External jackets on the tools themselves shall be used where feasible. Quieter procedures, such as use of drills rather than impact tools, shall be used whenever feasible.
- Stationary noise sources that could affect adjacent receptors shall be located as far from adjacent receptors as possible.

Significance Conclusion

Significant and unavoidable. Implementation of Mitigation Measures N-1 through N-3 would reduce noise impacts to sensitive receptors resulting from construction activities. Nonetheless, the noise levels experienced at the nearest sensitive receptors due to

construction would exceed the maximum conditionally acceptable noise level and thus remain a significant and unavoidable impact.

3.9.3.2 Temporary Increase in Ambient Noise

This section discusses the following CEQA Checklist questions:

Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Significance Threshold

A significant impact would result if the proposed project would result in a substantial temporary or periodic increase in the ambient noise level. A substantial increase would result if the temporary noise level generated were to exceed the maximum conditionally acceptable noise level and or contribute to a noise level already above a maximum conditionally acceptable noise level for the affected land use.

Impact Analysis

As described in section 3.9.3.1 above, the construction activities would result in significant and unavoidable noise impact because sensitive noise receptors near the project site would be exposed to noise levels that would be above established standards. As a result, construction of the pipeline, Citrus Reservoir, Citrus Pump Station, and the Crafton Hills Pump Station Expansion would result in a noticeable increase in the ambient noise level. The construction activities would last up to three-years and would result in a substantial periodic increase in the ambient noise level. A significant and unavoidable impact would result.

The proposed project would also result in a three-year noise increase as a result of soil export trips. The excavated soil from the proposed reservoir site may be exported to local quarries. It has been estimated that 230-460 truck trips could occur along the proposed haul routes (Figure 3.2-1). These trucks, along with other delivery trucks, would result in a three-year source of noise along the haul route.

Table 3.9-8 summarizes the existing noise level along the haul route from the existing traffic volume and estimates the noise level that would result from the trucks on the haul route. The noise model used to calculate the existing and the estimated existing-plus-project truck trips was

**TABLE 3.9-8
EXISTING AND EXISTING PLUS PROJECT NOISE LEVELS ALONG THE PROPOSED HAUL ROUTE**

Roadway Segment	Sensitive Receptor Type	ADT Volume ¹	Design speed (mph)	Vehicle Mix (%)			Leq dBA ² @ 50 feet from roadway center
				light	medium	heavy	
Existing Condition							
San Bernardino Ave.							
East of Church St.	Residential	3,110	45	97	2	1	73.8
Orange St. to Church St.	Residential	7,030	45	97	2	1	77.3
Orange St.							
North of Pioneer	Residential	9,950	45	97	2	1	78.8
Existing plus construction truck trips ³							
San Bernardino Ave.							
East of Church St.	Residential	3,570	45	85	2	13	79.5
Orange St. to Church St.	Residential	7,490	45	91	2	7	80.7
Orange St.							
North of Pioneer	Residential	10,410	45	93	2	5	81.4

¹ Katz, Okitsu & Associates (2007) Traffic Study for the Joint Program/Project EIR for Concept Plan No. 7 (Redlands Commons/Trojan Groves) and the Redlands Commons Development Plan for the City of Redlands.

² FHWA Traffic Noise Prediction Model (FHWA RD-77-108) (Barry, T.M. and Regan, J.A., 1978).

³ 460 heavy trucks per day increase from construction activities.

SOURCE: ESA, 2008.

the Federal Highway Administration's (FHWA) Traffic Noise Prediction Model (FHWA RD-77-108) (Barry, T.M. and Regan, J.A., 1978). It was assumed that the construction phase of the proposed project would generate 460 heavy trucks along the haul route. The table represents annual daily traffic (ADT) volumes for roadway segments that are along the proposed haul route. This ADT data was reported in the Katz, Okitsu & Associates, 2007 Traffic Study for the Joint Program/Project EIR for Concept Plan No. 7 (Redlands Commons/Trojan Groves) and the Redlands Commons Development Plan for the City of Redlands.

As shown in Table 3.9-8 above, the existing noise level along the identified haul route segments ranges from 73.8 to 78.8 dBA Leq at 50 feet from the roadway center-line. The ambient noise level along these roadway segments is above the conditionally acceptable noise level for sensitive residential land uses. The construction related truck trips along these roadway segments would increase the noise level range from 79.5 to 81.34. The trucks would contribute to a dBA increase of 5.7, 3.4, and 2.6 dBA.

The U.S. Department of Transportation's Highway Traffic Noise Analysis and Abatement Policy and Guidance (June, 1995) states that a 3 dBA change is barely perceptible and a 5 dBA readily perceptible. It could therefore be said that the project's truck trips would result in a noise level change that would be barely perceptible on Orange St, north of Pioneer St. However, the significance threshold for permanent noise sources, (Table 3.9-1) suggests that because the ambient noise level is greater than 65 dBA, a 1.5 dBA increase would be a significant impact. Moreover, the project's truck trips would be contributing to a noise environment that is already above the conditionally acceptable noise level. This incremental contribution would result in a significant and unavoidable impact.

An alternate truck route has also been identified for the transportation of the Citrus Reservoir excavation material. This route would require trucks to head south on Opal Ave. from the project site, turn west on East Lugonia Ave. and then head north on Tennessee St. to merge on to SR 30. From SR 30, trucks would exit onto eastbound Greenspot Rd. From Greenspot Rd. trucks would turn south on to Orange St., where excavated material would be delivered to local quarries.

As indicated by the FHWA Traffic Noise Prediction Model (FHWA RD-77-108) (Barry, T.M. and Regan, J.A., 1978) results, the truck trips would contribute to a dBA increase of 2.6 to 5.7 for the proposed haul route along San Bernardino Avenue. The California Department of Transportation's 2006 Traffic and Vehicle Data Systems Unit indicates that the westbound ADT on Lugonia Ave. near Wabash Ave. is about 20,000 vehicles. The Traffic and Vehicle Data Systems Unit indicates that the westbound ADT on Lugoina Ave. near Orange St. is about 15,700 ADT. These roadway volumes are greater than those on San Bernardino Ave. Therefore, the trucks would result in a smaller contribution to the noise level experienced by sensitive receptors along Lugonia Ave. than would be experienced along San Bernardino Ave. Nonetheless, the noise level at 50 feet from the Lugonia Ave. centerline would be louder than 70 dBA, the maximum conditionally acceptable noise level for sensitive residential land uses. Thus, any additional noise sources would incrementally contribute to an already noisy environment and would result in a significant and unavoidable impact.

Mitigation Measures

Implement Mitigation Measures N-1, N-2, and N-3.

Significance Conclusion

Significant and unavoidable. Implementation of Mitigation Measures N-1 through N-3 would reduce noise impacts due to construction activities. Nonetheless, the impact would remain significant and unavoidable as the noise levels would exceed the maximum conditionally acceptable noise level and would result in a substantial temporary or periodic increase in the ambient noise level.

3.9.3.3 Vibration

This section discusses the following CEQA Checklist question:

Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Significance Threshold

The proposed project would result in a significant impact if buildings would be exposed to the Federal Transit Administration (FTA) building damage ground-borne vibration threshold level of 0.2 PPV or if sensitive individuals would be exposed to the FTA human annoyance response ground-borne vibration threshold level of 80 RMS velocity level in VdB relative to 10^{-6} inches/second.

Impacts Analysis

As shown in **Table 3.9-9**, use of a large bulldozer for project construction generates vibration levels of up to 0.089 PPV or 87 RMS (large bulldozer) at a distance of 25 feet. A sonic pile driver would result in even higher vibration levels.

**TABLE 3.9-9
VIBRATION VELOCITIES FOR CONSTRUCTION EQUIPMENT**

Equipment Activity	PPV at 25 Feet (inches/second) ^a	RMS at 25 Feet (VdB) ^b
Large Bulldozer	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Pile Driver (sonic)	Upper Range 0.734	105
	Typical 0.170	93

^a Buildings can be exposed to ground-borne vibration levels of 0.2 PPV without experiencing structural damage.

^b The human annoyance response level is 80 RMS.

SOURCE: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

Alternative Alignment 1

The nearest sensitive receptor to the pipeline would be approximately 25 feet from heavy equipment activity and could experience vibration levels of 0.089 PPV and 87 RMS. If pile driving occurred at 25 feet, vibration levels of 0.734 PPV and 105 RMS could occur. These locations would include residences on the north of the river wash, the Valley Star High School on Opal Avenue near the airport, and the nearest residences and buildings on the corner of Crafton Avenue and San Bernardino Avenue. Vibration levels at these receptors could exceed the potential building damage threshold of 0.2 PPV and the annoyance threshold of 80 RMS. Other sensitive receptors farther from the project vicinity would be exposed to vibration levels at incrementally lower levels. Avoiding noise-sensitive times of day and notifying residences of construction activities would minimize the annoyance factor associated with this impact. Conducting before-and-after photographic surveys of neighboring residential and office space structures would ensure that damage from vibration is identified. This impact would be less than significant with mitigation.

In addition, the dilapidated bunkers associated with the abandoned Lockheed Propulsion's Mentone Facility on San Bernardino Avenue east of Crafton Avenue would be within 25 feet of the construction zone. Due to the condition of the abandoned structures on the former Lockheed site, impacts associated with vibration would not be significant and no mitigation would be required in this area.

Alternative Alignment 2

The nearest sensitive receptor to the pipeline would be approximately 15 feet from heavy equipment activity and could experience vibration levels of 0.191 PPV and 93.6 RMS. If pile driving occurred at 15 feet, vibration levels of 1.58 PPV and 111.6 RMS could occur. Vibration levels at these receptors could exceed the potential building damage threshold of 0.2 PPV and the annoyance threshold of 80 RMS. Other sensitive receptors in the project vicinity would be exposed to vibration levels at incrementally lower levels. Avoiding noise-sensitive times of day and notifying residences of construction activities would minimize the annoyance factor associated with this impact. Conducting before-and-after photographic surveys of neighboring structures would ensure that damage from vibration is identified. This impact would be less than significant with mitigation.

Alternative Alignment 3

The nearest sensitive receptor to the pipeline would be approximately 1,000 feet from heavy equipment activity and could experience vibration levels of 0.0003 PPV and 38.9 RMS. If pile driving occurred at 1,000 feet, vibration levels of 0.0029 PPV and 56.9 RMS could occur. Vibration levels at these receptors would not exceed the potential building damage threshold of 0.2 PPV or the annoyance threshold of 80 RMS. Other sensitive receptors in the project vicinity would be exposed to vibration levels at incrementally lower levels. This impact would be less than significant.

Alternative Alignment 4

The nearest sensitive receptor to the pipeline would be approximately 1,500 feet from heavy equipment activity and could experience vibration levels of 0.0002 PPV and 33.6 RMS. If pile driving occurred at 1,500 feet, vibration levels of 0.0015 PPV and 51.6 RMS could occur. Vibration levels at these receptors would not exceed the potential building damage threshold of 0.2 PPV or the annoyance threshold of 80 RMS. Other sensitive receptors in the project vicinity would be exposed to vibration levels at incrementally lower levels. This impact would be less than significant.

Citrus Reservoir

The nearest sensitive receptor would be approximately 250 feet from heavy equipment activity and could experience vibration levels of 0.0028 PPV and 57 RMS. If pile driving occurred at 250 feet, vibration levels of 0.023 PPV and 75 RMS could occur. Vibration levels at these receptors would not exceed the potential building damage threshold of 0.2 PPV or the annoyance threshold of 80 RMS. Other sensitive receptors in the project vicinity would be exposed to vibration levels at incrementally lower levels. This impact would be less than significant.

Citrus Pump Station

The nearest sensitive receptor would be approximately 500 feet from heavy equipment activity and could experience vibration levels of 0.001 PPV and 47.9 RMS. If pile driving occurred at 500 feet, vibration levels of 0.008 PPV and 65.9 RMS could occur. Vibration levels at these receptors would not exceed the potential building damage threshold of 0.2 PPV or the annoyance threshold of 80 RMS. Other sensitive receptors in the project vicinity would be exposed to vibration levels at incrementally lower levels. This impact would be less than significant.

Crafton Hills Pump Station Expansion

The nearest sensitive receptor to the building expansion could be as close as 85 feet from heavy equipment activity and could experience vibration levels of 0.014 PPV and 71 RMS. If pile driving occurred at 85 feet, vibration levels of .12 PPV and 89 RMS could occur. Vibration levels at these receptors could exceed the annoyance threshold of 80 RMS. Other sensitive receptors in the project vicinity would be exposed to vibration levels at incrementally lower levels. Avoiding noise-sensitive times of day and notifying residences of construction activities would minimize the annoyance factor associated with this impact. Conducting before-and-after photographic surveys of neighboring structures would ensure that damage from vibration is identified. This impact would be less than significant with mitigation.

Cherry Valley Pump Station

There would be no heavy equipment of pile driving activities as this project component would only include the installation of a new pump within the existing building.

Mitigation Measures

N-4: DWR shall conduct a survey of buildings and infrastructure located within 50 feet of construction zones that will experience vibratory pile driving. The survey shall include photographs of foundations, walls, and hardscape areas to document their condition prior to

construction. DWR shall return following the completion of the vibratory sheet-piling activities to inspect the condition of the structures. If damage is evident that is the result of vibration from construction activities, DWR shall provide appropriate compensation to remediate the damage.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measure N-4 would reduce impacts due to vibration levels from Alternative Alignments 1 and 2 and from the Crafton Hills Pump Station Expansion. Impacts resulting from Alternative Alignments 3 and 4, the Cherry Valley Pump Station, and the Citrus Reservoir and Citrus Pump Station would be less than significant without mitigation.

3.9.3.4 Permanent Noise Increase

This section discusses the following CEQA Checklist question:

Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Significance Threshold

As described in Table 3.9-1 above, the rationale for the significance criteria is that, as ambient noise levels increase, a smaller increase in decibels can result in significant annoyance. At lower decibel levels (i.e., below 60), the decibel level can increase more without causing significant annoyance.

Impacts Analysis

Operational traffic generated by the proposed project would be infrequent. Only a few employees are expected to be at the pump stations or reservoir on any given day, and only a few daily vehicle trips would be expected for routine inspection and maintenance of the pipelines. Combined, these vehicle trips would have a negligible effect on the ambient noise environment along the roadway network. Therefore, noise from the additional project-related traffic would be a less-than-significant impact without mitigation.

Also, as described in Table 3.9-5 above, noise from the Crafton Hills Pump Station would be approximately 55 dBA at 88 feet with the door open and in front of the sound wall. With the door closed (the normal operating mode), noise levels were about 47 dBA inside the property line and would be about 41 dBA on the other side of the noise wall at the location of the nearest sensitive receptor (assuming a 6 dBA reduction from the approximate 6-foot high sound wall). The project proposes to add new pumps at the Crafton Hills Pump Station by expanding the building towards the nearest residential receptor. The new pump stations would be equipped with noise insulation properties equal to or better than the existing Crafton Hills Pump Station. With this insulation properly installed operational noise levels would not exceed the nighttime standard of 45 dBA at the nearest sensitive receptor.

Assuming the Citrus Pump Station would generate noise levels similar to the Crafton Hills Pump Station, the nearest sensitive receptors (about 500 feet away) would be exposed to noise levels below 45 dBA Leq. Situating the Citrus Pump Station on the east side of the proposed reservoir would place the pump station approximately 40 feet below grade. If constructed on the west side of the reservoir, the pump station would be at existing grade. Either way, there would be at least four rows of citrus trees which would act as an additional noise attenuating vegetation barrier. Moreover, the pump station would be equipped with noise insulation properties that would reduce noise levels experienced outside of the building, regardless of the pump station location. Permanent increases in the ambient noise level would be less than significant.

Similarly, the operation of one additional pump within the existing sound-insulated Cherry Valley Pump Station would not result in a perceivable increase in the ambient noise level. Impacts would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. Design features of the proposed facilities would reduce operational noise levels to a less-than-significant level. In addition, noise from additional project-related traffic would have a less-than-significant impact on the roadway network.

3.9.3.5 Airport Noise

This section discusses the following CEQA Checklist questions:

For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport, would the project expose people residing or working in the project area to excessive noise levels?

For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

Significance Threshold

A significant impact would result if the project would expose people to excessive noise associated with either a private or public airport.

Impacts Analysis

The proposed project is located approximately 3,000 feet east of the Redlands Municipal Airport runway. There are no private airstrips within two miles of the project site that would affect the project. While this project would result in construction activities near the Redlands Municipal Airport, the land uses associated with the project would not be sensitive to noise. Employees

working at the Citrus Reservoir and Citrus Pump Station may be able to hear aircraft approach and takeoff noise. However, the pump station building would be constructed with noise insulating features designed to attenuate noise from the pumps. The insulation would also reduce outside noise from affecting workers in the pump station. Noise associated with the airport would not substantially increase noise levels within the pump station. Impacts from airport noise would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. Design features of the proposed Citrus Pump Station would reduce impacts to workers caused by excessive noise levels to a less-than-significant level.

3.9.3.5 Mitigation Measure Summary Table

Table 3.9-10 presents the impacts and mitigation summary for noise.

**TABLE 3.9-10
IMPACTS AND MITIGATION SUMMARY**

Proposed Project Impact	Mitigation Measure	Significance After Mitigation
Noise Standards: Daytime construction would exceed noise standards.	N-1, N-2, and N-3	Significant and Unavoidable
Temporary Increase in Noise: Construction activities would result in periodic increases in the ambient noise level.	N-1, N-2, and N-3	Significant and Unavoidable
Vibration: Impacts would be less than significant with the implementation of mitigation measures.	N-4	Less than significant
Permanent Noise Increase: The proposed project would not result in a significant permanent increase in ambient noise.	None required	Less than significant
Airport Noise: The proposed project would not introduce sensitive receptors to airport noise.	None required	Less than significant

3.10 Public Services and Utilities

This section provides an overview of the regulatory framework, existing public service and utility setting, and analysis of potential impacts to the services that would result from implementation of the proposed project.

3.10.1 Regulatory Setting

3.10.1.1 State

Protection of Underground Infrastructure

The California Government Code Section 4216-4216.9 “Protection of Underground Infrastructure” requires an excavator to contact a regional notification center (e.g., Underground Services Alert or Dig Alert) at least two days prior to excavation of any subsurface installations. Any utility provider seeking to begin a project that could damage underground infrastructure can call Underground Service Alert, the regional notification center for southern California. Underground Service Alert will notify the utilities that may have buried lines within 1,000 feet of the project. Representatives of the utilities are then notified and are required to mark the specific location of their facilities within the work area prior to the start of project activities in the area.

2005 California Energy Action Plan II

The California Energy Action Plan II is the state’s principal energy planning and policy document (California Energy Commission, 2005). The plan identifies state-wide energy goals, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California’s energy is adequate, affordable, technologically advanced, and environmentally sound. In accordance with this plan, the first priority actions to address California’s increasing energy demands are energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods in order to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To the extent that these actions are unable to satisfy the increasing energy and capacity needs, clean and efficient fossil-fired generation is supported.

The Energy Action Plan II includes the following energy efficiency action specific to water supply systems:

- Identify opportunities and support programs to reduce electricity demand related to the water supply system during peak hours and opportunities to reduce the energy needed to operate water conveyance and treatment systems.

In 2002, California established its Renewable Portfolio Standard program,¹ with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. The California Energy Commission subsequently accelerated that goal to 2010, and further recommended increasing the target to 33 percent by 2020. Because much of electricity demand growth is expected to be met by increases in natural-gas-fired generation, reducing consumption of electricity and diversifying electricity generation resources are significant elements of plans to reduce natural gas demand.

California Integrated Waste Management Act of 1989

The California Integrated Waste Management Act of 1989 (PRC, Division 30), enacted through AB 939 and modified by subsequent legislation, required all California cities and counties to implement programs to reduce, recycle, and compost at least 50 percent of wastes by the year 2000 (PRC Section 41780). The state determines compliance with this mandate to "divert" 50 percent of generated waste (which includes both disposed and diverted waste) through a complex formula. This formula requires cities and counties to conduct empirical studies to establish a "base year" waste generation rate against which future diversion is measured.

3.10.2 Setting

This section describes the existing public utilities and services in the project area. Public utilities in the project area include water, wastewater, electricity, and natural gas conveyance facilities. Public services include solid waste disposal, schools, hospitals, police, and fire protection.

3.10.2.1 Regional Setting

Portions of the proposed pipeline alignments, reservoir, pump station, and associated elements would be constructed within the communities of Redlands, Mentone, and Highland. The providers of public services to these areas are described below with respect to potential construction impacts.

3.10.2.2 Project Area Setting

Law Enforcement Services

Police services may be required at the construction site in the event of an emergency. San Bernardino County Sheriff's Department provides law enforcement services to the incorporated City of Highland and to the unincorporated community of Mentone, as well as other unincorporated areas of San Bernardino County. The County of San Bernardino Sheriff Station and the City of Redland's Police Department provide law enforcement services within the project area. The County of San Bernardino Sheriff Station, located at 34282 Yucaipa Boulevard in

¹ The Renewable Portfolio Standard is a flexible, market-driven policy to ensure that the public benefits of wind, solar, biomass, and geothermal energy continue to be realized as electricity markets become more competitive. The policy ensures that a minimum amount of renewable energy is included in the portfolio of electricity resources serving a state or country. By increasing the required minimum amount over time, the Renewable Portfolio Standard puts the electricity industry on a path toward increasing sustainability.

Yucaipa, is approximately six miles south of Crafton Hills Pump Station. The City of Redlands' main police station is located at 212 Brookside Avenue, approximately four miles southwest of the proposed Citrus Reservoir.

Fire Protection

Fire protection and emergency medical response services may be required at the construction site in the event of an emergency. The City of Redlands Fire Department has 19 firefighter-paramedics and 57 firefighter-emergency medical technicians (EMTs). The Department responds to over 7,000 calls for service each year. Emergency response is provided from four fire stations. Fire Station 261 and 263 are the closest stations to proposed project. Fire Station 261 is located at 525 East Citrus Avenue, approximately two and a half miles southwest of the proposed Citrus Reservoir and Fire Station 263 is located at 10 West Pennsylvania, approximately two and half miles west of the proposed Citrus Reservoir.

First response for fire and paramedic services to the project site area is also provided by the City of Highland Fire Department Station No. 542, located at 29507 Baseline Street in the City of Highland.

Water and Wastewater Facilities

Water and wastewater services are provided to the Redlands and Mentone areas by the City of Redlands Municipal Utilities Department (RMUD). The RMUD provides high quality drinking water by supplying a blend of local groundwater, local surface water and imported water from the State Water Project.

Water and wastewater services are provided to the City of Highland by the East Valley Water District (EVWD). Surface water from the Santa Ana River meets a quarter of the EVWD's water needs. The EVWD has a service population of approximately 65,000. EVWD's main source of water comes from the Bunker Hill Groundwater Basin and the Santa Ana River, SWP water is used only as a backup water supply.

Storm Water

There are a number of regional and local storm drains that run through the City of Redlands. Most of these drains flow through enclosed pipes or along improved open channels. The City of Redlands maintains all improved storm drains that have dedicated easements for storm drain purposes. The proposed project's construction area does not contain any improved drainage features. Storm water runs off the project area into the Santa Ana River. The San Bernardino County Flood Control District has been issued a storm water discharge permit that is applicable to the project area.

Solid Waste Management

Construction activities would result in the removal of approximately 35 acres of citrus orchard. This bio-mass waste could be hauled to a regional landfill that accepts green waste. The two

closest landfills to the project site located within the City of Redlands are the San Timoteo Sanitary Landfill and the California Street Landfill. The California Street Landfill is a municipal solid waste landfill owned and operated by the City of Redlands, Municipal Utilities Department. The San Timoteo Sanitary Landfill is owned and operated by the County of San Bernardino Solid Waste Management Division and accepts Class III wastes such as residential, demolition, commercial refuse, and decomposable inert solids. Both landfills accept green-waste.

Citrus orchard removal projects in the region often use a tree chipper on site. Removed trees are feed into the chipper and the mulch is taken to a landscape yard and sold as mulch. This practice does not require landfill disposal.

According to the California Integrated Waste Management Board, diversion rates for San Bernardino County exceeded 55 percent for the 2004 year (California Integrated Waste Management Board, 2007), meeting the federal, state, and local solid waste diversion regulations.

Other Utilities

Electricity is provided to the communities of Redlands, Mentone and Highland by Southern California Edison (SCE) and natural gas services are provided by the Southern California Gas Company (SCGC). Operation of the proposed project would result in an increase in power use from the pump and office facility operations. Construction activities may require the use of electric powered construction equipment that would result in an increased demand on the power grid. Contractor field offices and electric power tools would demand this energy.

3.10.3 Impact Assessment

The proposed project's potential impacts were assessed using the *CEQA Guidelines* Appendix G Checklist thresholds. The following sections discuss the key issue areas identified in the *CEQA Guidelines* with respect to the project's potential effect to public services and utilities. Significance thresholds are identified and a significance conclusion is made following the discussion.

3.10.3.1 Local Services and Utilities Systems

This section discusses the following CEQA checklist question:

Would the construction and operation of the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for public services such as fire and police protection, schools, hospitals, or other public services or facilities?

Significance Threshold

The project would have a significant impact if it resulted in substantial adverse effect on emergency services; emergency response plans or emergency evacuation plans; government

services such as fire and police protection, schools, hospitals, or other public services or facilities. For the purpose of this analysis, a substantial adverse impact would result if service ratios, response times, and performance objectives would not be met after implementing this project.

Impact Analysis

Local utility services could be disrupted as a result of project construction. Impacts to utilities and services could involve temporary disruption that would not exceed one day. Local utility lines that would be disrupted during pipeline installation would be identified during preliminary design, and could include gas lines, over-head power lines, telephone, TV cable, and water. With implementation of the mitigation measures below, impacts would be less than significant.

The project would not affect operations of Metropolitan Water District's Inland Feeder pipeline or the Foothill Pump Station. SBVMWD's Foothill Pipeline would not be affected except during the connection of the new pipeline. This temporary outage would be sustained for the minimum amount of time required to make the new connection, which could require two weeks.

Within the former Lockheed Propulsion site, abandoned utility lines will likely be encountered in unknown quantities and in various stages of disrepair. Alternative Alignments 1 and 4 cross through the abandoned site. The site includes abandoned structures and remnants of streets. There is potential for abandoned water supply pipelines, septic pipelines, electric lines, and telephone lines to remain underground. The extent and condition of these utilities is unknown. Since these utilities are no longer serviceable, this would not be considered a utility impact.

Construction of pipelines in or adjacent to roadways could result in partial road closure and could impair local fire, police, or other emergency access during this period. Disruption of roadway access and increased accident potential could also occur in the event of a pipeline rupture or other emergency upset condition. Such an event could also temporarily increase demand for police and fire services as well as impair emergency access. The potential impact on the demand for police and fire services would be less than significant. To ensure that access to local land uses by emergency services personnel is maintained at all times, DWR would implement the mitigation measures below. There would be no long-term increases in demand for police or fire services associated with this project.

The project would not result in substantial adverse impacts to any local schools, parks, or other public facilities, such as libraries because the project is not a direct population generator, such as residential units, which would result in impacts to these and other public facilities.

Mitigation Measures

PU-1: Prior to excavation, DWR shall locate overhead and underground utility lines, such as natural gas, electricity, sewage, telephone, fuel, and water lines, that may reasonably be expected to be encountered during excavation work.

PU-2: DWR shall confirm the specific location of all high priority utilities (i.e. pipelines carrying petroleum products, oxygen, chlorine, toxic or flammable gases; natural gas in

pipelines greater than 6 inches in diameter, or with normal operating measures, greater than 60 pounds per square inch gauge; and underground electric supply lines, conductors, or cables that have a potential to ground more than 300 volts that do not have effectively grounded sheaths) and such locations will be highlighted on all constructions drawings. In the contract specifications, DWR will require that the contractor provide weekly updates on planned excavation for the upcoming week when construction will occur near a high priority utility.

PU-3: DWR shall notify local fire departments any time damage to a gas utility results in a leak or suspected leak, or whenever damage to any utility results in a threat to public safety.

PU-4: DWR shall contact utility owner if any damage occurs as a result of the project.

PU-5: DWR shall coordinate final construction plans and specifications with affected utilities.

PU-6: DWR shall provide a copy of the Traffic Control Plan to the County sheriff's department, local police departments, County fire department, and local fire departments for their review prior to construction. DWR shall provide 72-hour notice to the local service providers prior to construction of pipeline activities.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measures PU-1 through PU-6 would ensure that access to local land uses by emergency services personnel is maintained at all times and would reduce impacts from disruptions in utility services to a less-than-significant level.

3.10.3.2 Solid Waste

This section discusses the following CEQA checklist questions:

Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Would the project comply with federal, state, and local statutes and regulations related to solid waste?

Significance Threshold

The project would have a significant impact if it resulted in substantial adverse effect on the area by generating significant quantities of solid waste materials that could not be accommodated by local landfills. Additionally, a significant impact would result if the project did not comply with solid waste regulations.

Impact Analysis

The proposed project would generate a large volume of excavated material from the reservoir, pump stations, and trench spoils from construction of the pipeline. The excavated material would be stockpiled and reused as backfill or taken to a local rock quarry. DWR does not anticipate the need to dispose of excavated material in a landfill as spoils would have re-sale value. Large quantities of green-waste would be generated during the clearing and grubbing phase of the citrus orchard removal. This waste would be either mulched and recycled or hauled to either the San Timoteo Sanitary Landfill or the California Street Landfill. According to the California Integrated Waste Management Board's Waste Stream Profile of the California Street Landfill, there is 68 percent remaining capacity and has an estimated closure date of 2031. Green-waste is accepted and processed at the facility. The San Timoteo Landfill has 46.5 percent remaining capacity and an estimated closure date of 2016. Green-waste is accepted and processed at the landfill as well. DWR and its contractor may choose to chip the removed citrus trees on site and ship the chipped material to a facility that accepts and sells landscape mulch. This option would not require that the green-waste be sent to a landfill.

The construction activities would generate waste from equipment packaging and use. This waste volume would be small and would be disposed of at the local landfills. Implementation of the following mitigation measures would minimize the potential for the project to generate substantial quantities of waste materials.

Mitigation Measures

PU-7: DWR shall encourage project facility design and construction methods that produce less waste.

PU-8: DWR shall include in its construction specifications a requirement for the contractor to describe plans for recovering, reusing, and recycling wastes produced through construction, demolition, and excavation activities.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measures PU-7 and PU-8 would minimize the potential for the project to generate substantial quantities of waste materials.

3.10.3.3 Water and Wastewater

This section discusses the following CEQA Checklist questions:

Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new entitlements needed?

Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Significance Threshold

A significant project impact would result if existing public service systems could not adequately provide drinking water or wastewater treatment without the expansion of existing resources.

Impact Analysis

The proposed project would connect potable water service to the Citrus Pump Station. Water would be supplied from the City of Redlands, which receives its water from SBVMWD. The pump station would include one restroom. This increased water demand would not require the SBVMWD to obtain new or expanded water supplies. Impacts to water supply and the conveyance system would be less than significant.

The Citrus Pump Station would include a new septic system. The septic system would not exceed wastewater treatment requirements or require the expansion of existing wastewater treatment facilities. The system would be designed based on sound engineering principals based on County of San Bernardino design standards. Mitigation Measure Geo-1 would ensure that the system was consistent with County standards (see Section 3.5 Geology, Soils, Seismicity, and Mineral Resources). Impacts would be less than significant.

The proposed project would not require the construction of new stormwater drainage facilities or require the expansion of existing facilities. Currently, there is no improved drainage infrastructure near the project components; the capacity of which could potentially be exceeded by increased runoff. Moreover, the proposed project would not generate large volumes of stormwater runoff as new impervious surfaces would be relatively small and the associated runoff would be dealt with onsite. The proposed pump station would be located within an excavated depression and all runoff would be kept on site. The proposed expansion to the Crafton Hills Pump Station would direct all runoff to the existing pervious ground material for infiltration. The proposed pipeline would be underground and backfilled with pervious material, no runoff would result from the

pipeline. All improvements to Cherry Valley Pump Station would occur within the existing building. Impacts would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. Plumbing at the Citrus Pump Station would not require the SBVMWD to obtain new or expanded water supplies. In addition, the new septic system at the Citrus Pump Station would not exceed wastewater treatment requirements or require the expansion of existing wastewater treatment facilities.

3.10.3.4 Energy Demand

This section discusses the following significance threshold question:

Would the project cause wasteful, inefficient or unnecessary consumption of energy?

Significance Threshold

The project would have a significant impact if it resulted in wasteful consumption of energy or required more electricity than the local system could provide.

Impact Analysis

Operation of the pump stations over the long-term would increase electricity consumption. The SWP consumes a substantial amount of energy to convey water from northern California. Recent published accounts conclude that the system consumed up to 9,859.53 million kilowatt hours (Mkwh) in 2004.² **Table 3.10-1** summarizes the published energy use associated with the East Branch Extension Phase I facilities. This power usage includes the combined operations of the Cherry Valley Pump Station, the Crafton Hills Pump Station, and the Greenspot Pump Station. **Table 3.10-2** provides energy usage estimates for the proposed project. The energy estimates provide a linear increase commensurate with the increased pumping capacity. As shown in Table 3.10-1, annual energy usage varies greatly depending on the availability and demand for water. Actual future energy consumption would be similarly variable. Upon completion of the project, the pumping capacity and estimated potential energy usage would both increase by approximately 350 percent from existing conditions.

² Department of Water Resources, *Management of the State Water Project Bulletin 132-05*. December, 2006

**TABLE 3.10-1
ENERGY USAGE FOR EAST BRANCH EXTENSION PHASE I**

	Energy Used (millions of kilowatt-hours)		
	2004	2005	2006
Cherry Valley Pump Station	0.3	0.28	0.28
Crafton Hills Pump Station	2.64	2.44	5.88
Greenspot Pump Station	3.25	2.65	5.3
Total EBX Phase I Energy Used	6.19	5.37	11.46

SOURCE: DWR 2007

**TABLE 3.10-2
ESTIMATED FUTURE ENERGY USE OF THE EAST BRANCH EXTENSION PHASE II**

	Greenspot	Citrus	Crafton	Cherry Valley	Total
Existing Pump Capacity (cfs)	40	0	40	16	96
Pump Capacity Upon Completion of Phase II (cfs)	0	200	135	56	391
2006 energy use (Mkwh)	5.3	0	5.88	0.28	11.46
Estimated Energy Use Upon Completion of Phase II (Mkwh) ^a	0	29.6	20	0.99	50.59

^a This shows a linear increase, assuming current average load per cfs pumped. Actual energy requirements will vary year to year and may be substantially greater depending on average daily usage of the pumps. Currently, existing pumps operate on average 8-16 hours per day. In the future, the expanded pump stations may operate at capacity for 24 hours per day during half the year and 16 hours per day for the other half.

SOURCE: ESA 2007, compiled from DWR information

DWR would install new energy-efficient pumps that would minimize the potential energy demand. In addition, with storage provided in the Citrus Reservoir and Crafton Hills Reservoir, the East Branch Extension Phase II would be operated to maximize off-peak energy use to avoid increases in peak demand. This is consistent with the California Energy Action Plan II goal that favors the use of off-peak power for water conveyance (see Section 3.10.1.1).

Energy for the pump stations would be provided by SCE. The Citrus Pump Station would be connected to the electrical grid from a pole connecting to the existing 115 kilovolt (kv) line on San Bernardino Avenue and Opal Avenue. The power pole would be approximately 80 feet tall.

Electricity is generated and made available to southern California from generating facilities and transmission lines located throughout the western US. SCE would be responsible for delivering the energy needed for the project. SCE owns and operates transmission lines that are constructed based on anticipated demands within regions. It is anticipated that modifications to the existing Mentone and San Bernardino substations would be required to accommodate the Citrus substation. Additional facilities, other than the power line from San Bernardino Avenue, would be addressed in separate environmental documentation prepared by SCE.

Approaches to conserving energy in the movement of water include using energy-efficient equipment and implementing concurrent repairs and maintenance of facilities to minimize power use. Scheduling pumps to operate as much as possible during off-peak energy demand periods, within system constraints, also is consistent with state policies for maximizing off-peak power usage for utilities. Lighting fixtures for exterior safety and interior operations would be energy efficient.

Consistent with the California Energy Action Plan II priorities for reducing energy usage, DWR would continue to maximize off-peak period energy use. With power provided by SCE, the East Branch Extension Phase II would not result in wasteful or inefficient use of energy. The impact would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. DWR would install new energy-efficient pumps that would minimize the potential energy demand. In addition, with storage provided in the Citrus Reservoir and Crafton Hills Reservoir, the project would be operated to maximize off-peak energy use to avoid increases in peak demand.

3.10.3.5 Summary of Impacts and Mitigation Measures

Table 3.10-3 presents the impacts and mitigation summary for Public Services and Utilities.

**TABLE 3.10-3
IMPACTS AND MITIGATION SUMMARY**

Proposed Project Impact	Mitigation Measure	Significance after Mitigation
Local Services and Utility Systems: The proposed project would result in less-than-significant impacts to local services and utilities with implementation of mitigation measures.	PU-1 through PU-6	Less than significant
Solid Waste: The proposed project would result in a less-than-significant impacts on local landfills with implementation of mitigation measures.	PU-7 and PU-8	Less than significant
Water and Wastewater: The proposed project would result in less-than-significant impacts to water supplies and wastewater treatment capacity.	None required	Less than significant
Energy Demand: The proposed project would result in less-than-significant increase in energy usage.	None required	Less than significant

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3.11 Transportation and Traffic

This section provides an overview of the regulatory framework, existing transportation and traffic system at the proposed project site and surrounding region, an analysis of potential impacts to the transportation system that would result from implementation of the project, and identification of mitigation measures, as necessary.¹

3.11.1 Regulatory Framework

3.11.1.1 San Bernardino County

The Circulation and Infrastructure Element of the San Bernardino County General Plan (URS, 2007a) guides the design of the transportation system and public facilities in the county. The San Bernardino County General Plan transportation-related goals and policies pertain to long-term land use and transportation planning. This analysis takes into consideration the long-term General Plan goals to maintain peak-hour traffic level-of-service standards on county and state roadways when evaluating traffic impacts during project construction.

The San Bernardino County Department of Public Works requires roadway encroachment permits to perform work within the public right-of-way.

3.11.1.2 Project Consistency with Plans and Policies

As the construction of the pipelines, Citrus Reservoir and Citrus Pump Station would be sited within private lands, existing DWR easements, and public right-of-way, acquisition of temporary construction easements and roadway encroachment permits could be required. Temporary construction easements could also be required for contractor staging areas and equipment and materials storage. DWR would use the analysis contained within this section to support the acquisition of Roadway Encroachment Permits from the San Bernardino County Department of Public Works. According to the City of Redlands Municipal Code Chapter 12.16, DWR would be required to obtain a City permit if excavation and construction is to occur in public streets in Redlands. Four pipeline alternative alignment configurations have been proposed as part of the project. Roadways affected by these alternative alignments differ, with Alternative Alignments 3 and 4 avoiding impacts to San Bernardino, Crafton, and Madeira Avenues. All areas and roadways disturbed by construction activities would be restored to pre-construction conditions, and spoils from trenching associated with pipeline installation would be retained for backfill to the extent possible, thus reducing the required haul trips. Construction staging areas would be established in areas near construction zones and, where feasible, moved as construction progresses in order to minimize hauling distances and avoid disrupting one area for extended periods of time.

¹ A technical memorandum (Appendix F) was prepared as a resource document for the EIR analysis of potential traffic impacts associated with construction of the proposed East Branch Extension Phase II project.

3.11.2 Setting

3.11.2.1 Regional Setting

Interstate 10 and Interstate 210 provide regional access to the proposed project location. Local access is provided by roadways such as but not limited to: Greenspot Road / 5th Street, San Bernardino Avenue, State Route 38 (Orange Street – Lugonia Avenue – Mentone Boulevard), Cone Camp Road, Opal Avenue, Crafton Avenue, Madeira Avenue and Wabash Avenue. **Figure 3.11-1** depicts major roads in the project vicinity. Characteristics of these roadways are described below.

Interstate 10 (I-10) is the main throughway in eastern San Bernardino County and connects to other regional transportation facilities in the project area, including I-210, I-15, I-215, and I-5. Freeway interchanges that provide access to the network of local roads are located at Tennessee Street / Interstate 210, Orange Street, University Street and Ford Street (all to the southwest of the project area), as well as Live Oak Canyon Road – Oak Glen Road (to the southeast of the project area). Average daily traffic volume on I-10 in the project area ranges between 140,000 to 163,000 vehicles (Caltrans, 2007a). Trucks represent about 12 percent of the total daily traffic volume (Caltrans, 2007b).

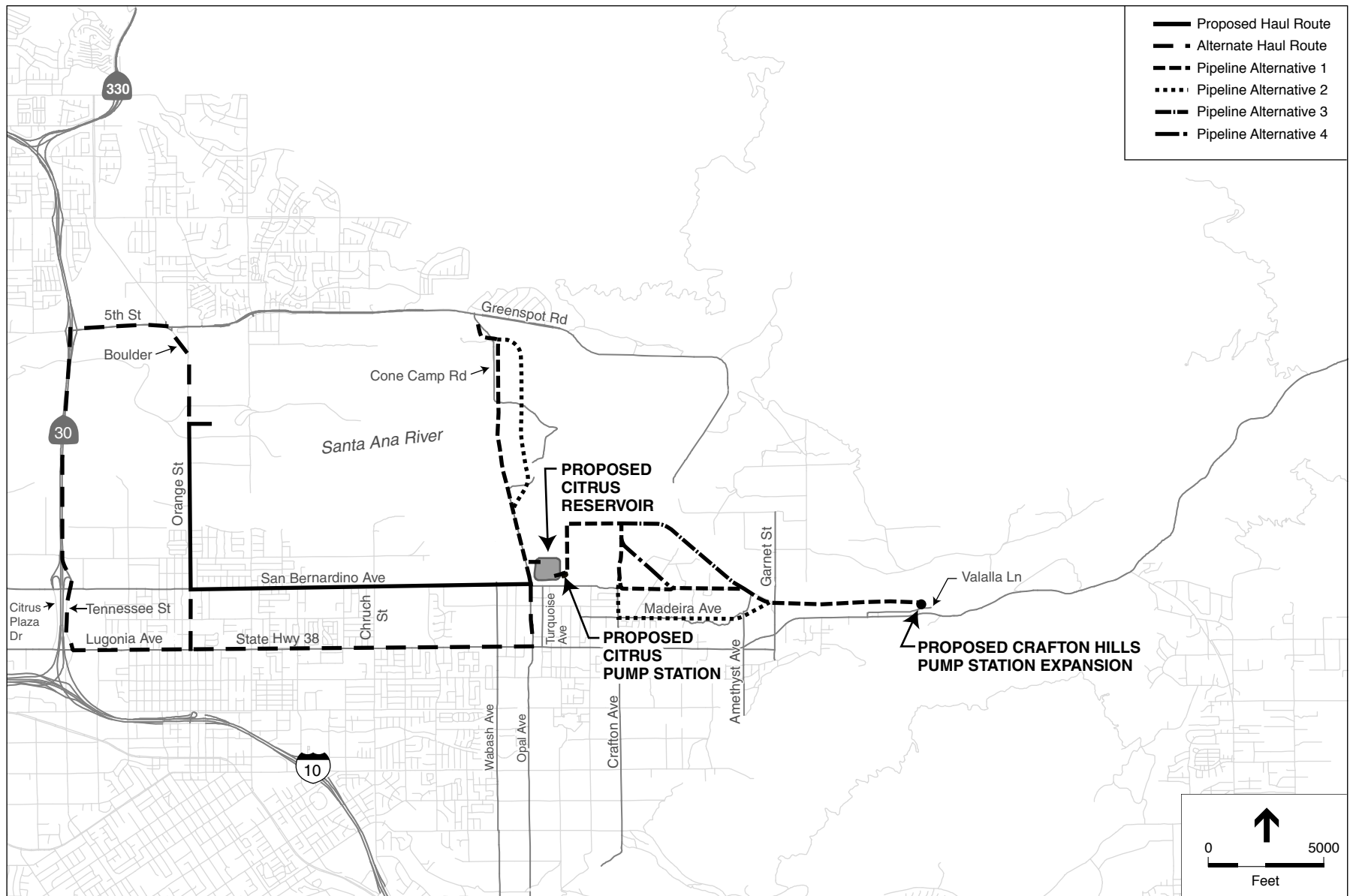
Interstate 210 (I-210) is state highway that, as a freeway, connects I-215 and I-10. Freeway interchanges that provide access to the network of local roads are located at Fifth Street (which becomes Greenspot Road and provides access to the Foothill Pump Station) and San Bernardino Avenue. Average daily traffic volume on I-210 in the project area ranges between 52,000 to 114,000 vehicles (Caltrans, 2007a). Trucks represent about 6 percent of the total daily traffic volume (Caltrans, 2007b).

3.11.2.2 Project Area Setting

Local Access Roadways

Greenspot Road is a paved four-lane local roadway with paved shoulders and designated bike lanes. It provides access to Foothill Pump Station from I-210 (via 5th Street). The speed limit on Greenspot Road ranges from 40 to 50 mph. Residential development exists on the north side of the roadway.

State Route 38 (SR 38) is a two-lane roadway that begins at I-10 in the City of Redlands, running north (as Orange Street) to Lugonia Avenue and then turning east (as Lugonia Avenue) until Wabash Avenue, where the name changes to Mentone Boulevard. In Redlands, Lugonia Avenue connects to I-210 west of Orange Street. SR 38 has paved shoulders of substantial width. The posted speed limit is 50 mph. Beyond the town of Mentone, SR 38 becomes Mill Creek Road. Dense development exists on both sides of this roadway as it passes through communities. Development becomes sparse near the Crafton Hills Pump Station and infrequent east of Bryant Street. The ADT on SR 38 in the project area (I-10 to Crafton Avenue) ranges between 13,000 and 25,000 vehicles (Caltrans, 2007a). Trucks represent about 9 percent of the total daily traffic volume (Caltrans, 2007b).



SOURCE: ESA, 2008.

DWR - East Branch Extension . 206008.01

Figure 3.11-1
Major Roads in Project Vicinity

Traffic on Lugonia Avenue is controlled by traffic signals at Church, Orange, and Tennessee Streets. Those intersections are currently operating at an acceptable LOS C or better (City of Redlands, 2008).

San Bernardino Avenue which varies in width between two and four lanes, with separate turn lanes at intersections, connects (at an interchange) with the I-210 freeway, extending east to Opal Avenue. Land uses along the roadway are primarily residences, with a community park on the southwest corner of San Bernardino Avenue / Church Street. East of Wabash Avenue, San Bernardino Avenue has two lanes with an unpaved shoulder on the north side and residences to the south. Its eastern terminus is at Mentone Reservoir, where a roadblock prohibits further access to the unimproved service road that leads to Crafton Avenue and the water treatment plant. West of I-210, it continues to Tippecanoe Avenue (with a six-lane section between California Street and Mountain View Avenue), where it becomes Orange Show Road. The speed limit is posted at 45 mph east of Texas Street. Parking is generally permitted along the roadway. The ADT on San Bernardino Avenue in the project area is about 3,100 vehicles east of Church Street and about 7,000 vehicles between Church Street and Orange Street (City of Redlands, 2008). Traffic on San Bernardino Avenue is controlled by traffic signals at Orange Street, Texas Street, and the I-210 Northbound and Southbound Ramps, and by all-way stop signs at Church Street. Each of those intersections are currently operating at an acceptable LOS C or better, except San Bernardino Avenue / I-210 Southbound Ramps, where an acceptable LOS D prevails during the p.m. peak hour (City of Redlands, 2008).²

Orange Street varies in configuration, changing from a two-lane roadway (with separate turn lanes at major intersections) south of San Bernardino Avenue, to a four-lane roadway (with a center turn lane and room for on-street parking on both sides of the road) north of San Bernardino Avenue. Orange Street, near Beattie Lane and Hubbard Court (two cul-de-sacs that do not intersect with Orange Street), narrows to once again be a two-lane roadway with a narrow shoulder as it crosses the Santa Ana River. Until Beattie Lane, Orange Street passes through a developed area. There is a traffic signal on Orange Street where vehicles enter the CMEX USA site. The ADT on Orange Street is about 8,950 vehicles north of Pioneer Avenue (City of Redlands, 2008). Traffic on Orange Street is controlled by traffic signals at Lugonia Avenue and San Bernardino Avenue, and by all-way stop signs at Pioneer Avenue. Each of those intersections are currently operating at an acceptable LOS C or better (City of Redlands, 2008).

Madeira Avenue is a two-lane east to west roadway with a 30-foot pavement width, no shoulders or designated bike lanes and sufficient space for on-street parking. Madeira Avenue's western terminus is at its intersection with Malachite Avenue and its eastern terminus is with its intersection with Sapphire Avenue. The eastern end of Madeira Avenue, approximately 1,000 feet, is an unimproved roadway segment and may not open or suitable for traffic. To the

² Level of service (LOS) is a measure of the quality of traffic flow on roadways and at intersections, measured in terms of average vehicle delay experienced by motorists. The delay at intersections is a function of the signal timing, intersection lane configuration, hourly traffic volumes, and other factors. Service levels range from LOS A (free flow, little congestion) to LOS F (forced flow, extreme congestion). The minimum acceptable LOS established by the City of Redlands is LOS C for City intersections, and LOS D for freeway ramp intersections. LOS descriptions and corresponding ranges of average control delay are shown in Appendix F (Attachment A).

east of Crafton Avenue, Madeira Avenue has residences on the south side of the road and light industrial land uses to the north. To the west of Crafton Avenue, residences are located on the north and south sides of Madeira Avenue.

Garnet Street is a two-lane roadway with no shoulders / bike lanes, terminating at Florida Street to the north. Some sections have unpaved turnouts. The posted speed limit is 45 mph. North of SR 38, this roadway has limited adjacent development. Garnet Street has a two lane bridge over that crosses the Santa Ana River. On the north side of the river Garnet goes through large residential farm lots.

Crafton Avenue north of SR 38 is a two-lane, 24-foot-wide roadway with 10-foot-wide unpaved shoulders. On-street parking is available along the section north of Madeira and intermittently along the section between Madeira Avenue and SR 38 adjacent to the public school. Residential development exists on both sides of the northern portion of the roadway.

Turquoise Avenue is a two-lane roadway through a residential neighborhood in the town of Mentone, which runs from Florence Avenue south of the intersection with Mentone Boulevard to San Bernardino Avenue, where it terminates to the north.

Opal Avenue is a two-lane roadway with a pavement width of about 24 feet, running from SR 38 (Mentone Boulevard) to its terminus at the edge of the Santa Ana River, where it becomes Cone Camp Road. As San Bernardino Flood Control District manages the area along the Santa Ana River, Opal Avenue is not publicly accessible beyond the locked gate north of the intersection with San Bernardino Avenue. Beyond the closed gate, Opal Avenue becomes a 20-foot-wide, one-lane paved service road with no shoulder. A private high school is located at the northern end of the publicly access roadway. South of San Bernardino Avenue, Opal Avenue passes through residential development on the east side; there is no development fronting the west side, except the Mentone Senior Center & Library just north of Mentone Boulevard. Traffic is controlled by a stop sign at Mentone Boulevard; the cross traffic on Mentone Boulevard does not stop.

Wabash Avenue is a two-lane roadway between SR 38 (Mentone Boulevard – Lugonia Avenue) and San Bernardino Avenue (both of which connect to I-210). The posted speed limit is 35 mph. Wabash Avenue terminates north of the intersection with San Bernardino Avenue at the entrance to the Redlands Municipal Airport. With the exception of the west side of the roadways northern portion, development exists on both sides of the roadway. Traffic is controlled by all-way stop-sign control at San Bernardino Avenue, and by traffic signals at Lugonia Avenue – Mentone Boulevard.

Cone Camp Road is a single-lane access road that traverses the Santa Ana River and connects to Greenspot Road on the north side of the river. To the south of the river, Cone Camp Road becomes Opal Avenue. As San Bernardino Flood Control District manages the area along the Santa Ana River, Cone Camp Road is not publicly accessible.

Sycamore Street is a dirt roadway that provides access to the San Bernardino County Flood Control District-owned land from SR 38. Public access to Sycamore Street is not available. There is no development along this roadway.

Vallala Lane is a single-lane unimproved dirt road that runs behind existing residences on SR 38, and terminates at the entrance to the Crafton Hills Pump Station at the intersection with East Julian Drive.

Tennessee Street and *Citrus Plaza Drive* provide connections with I-210 at San Bernardino Avenue. Tennessee Street connects with the northbound on-ramp, and Citrus Plaza Drive connects with the southbound off-ramp. Traffic on these roads is controlled by traffic signals at Lugonia and San Bernardino Avenues.

The I-210 / 5th Street interchange (in the City of Highland), and eastbound on 5th Street, provides access to Orange Street and the Santa Ana River Wash via signalized intersections at 5th Street / I-210 Northbound Ramps and 5th Street / Boulder Avenue. *Boulder Avenue* becomes Orange Street at the Highland/Redlands city boundary. 5th Street and Boulder Avenue are designated as truck routes by the City of Highland.

Transit Service

Public transit service on roads in the project study area is provided by Omnitrans, which provides bus service in the San Bernardino Valley area. The nearest Omnitrans bus service is provided by Routes 8 and 9, which run on Mentone Boulevard/SR 38 west of Crafton Avenue, along Crafton Avenue between SR 38 and 5th Avenue, and on Citrus Avenue west of Wabash Avenue.

3.11.3 Impact Assessment

3.11.3.1 Construction/Operation Traffic

This section discusses the following CEQA Checklist questions:

Would the project cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratios on roads, or congestion at intersections)?

Would the project exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

Significance Threshold

The project would have a significant impact if it resulted in substantial adverse effect on traffic due to vehicle trips made by construction workers and construction activities. A substantial adverse impact would result if roadway operating conditions were degraded during project operations. The City of Redlands (General Plan Goal 5.20) has identified a minimum level of

service (LOS) standard of LOS C for City intersections. The minimum acceptable LOS established by Caltrans for freeway ramp intersections is LOS D. For purposes of this analysis, the City and Caltrans standards have been used to judge project impacts during the up to three-year construction period.

Impact Analysis

The analysis of potential project impacts presented herein focuses on impacts during project construction because once construction is complete, operation of the facilities (pipelines, reservoir, and pump stations) would only generate occasional maintenance trips, which would not individually or cumulatively degrade the operation of roadways or intersections. As stated in Chapter 2, Project Description, construction activity at the existing Crafton Hills Pump Station and the proposed Citrus Pump Station, as well as construction of new pipelines and a new reservoir, would generate up to a three-year increase in vehicle trips by construction workers and construction vehicles on area roadways. The primary off-site impacts from the movement of construction trucks (primarily soil hauling trucks and material deliveries) would include intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles. **Table 3.11-1** presents the estimated vehicle trip generation for the proposed project (by construction activity) for each project component, and for a scenario with simultaneous construction of all project components.³

The construction scenario characteristics described herein have been developed to allow general assessment of the nature and magnitude of potential construction impacts. The final construction scheduling of specific facility projects would be determined when design plans are finalized and may vary from that presented here. Similarly, the exact construction characteristics, such as excavation quantities or estimated truck trips, may vary somewhat from those presented here.

Pipeline Installation

Traffic-generating construction activities would consist of the daily arrival and departure of construction workers to each day's work site along the alignment, and reservoir site and trucks hauling equipment and materials to and from the construction sites.

The pipeline would be constructed by up to two or more construction crews, with about 25 people each, over a period of 18 to 24 months. This analysis assumes there would be two crews, and worker commute trips per day would total (for the two crews) about 100 one-way trips (i.e., 50 trips to each day's work site in the morning and 50 trips away from the work site in the evening). Work sites at the portion of the alignment in proximity to the Citrus Reservoir could be accessed using roadways such as, but not limited to: I-10, I-210 and SR 38, San Bernardino

³ The term "vehicle trip" is defined as a one-way vehicle movement with its origin or destination at the work site. The number of truck trips is twice the number of trucks because each truck has to enter and leave the work site. Similarly, the number of worker vehicle trips is twice the number of workers because each worker arrives at the work site in the morning and departs from the work site in the evening. The Cherry Valley Pump Station project component is not included in Table 3.11-1 because traffic generated during the one-month construction period at that site would be negligible (limited to the delivery of the pump and commute trips by the three workers needed to install the pump). Impacts would be less than significant.

**TABLE 3.11-1
SUMMARY OF ANTICIPATED CONSTRUCTION ACTIVITIES
AND AVERAGE NUMBER OF VEHICLE TRIPS¹ (TRUCKS AND WORKERS)**

Construction Activity	East Branch Extension Pipeline	Citrus Reservoir	Citrus Pump Station	Crafton Hills Pump Station Expansion	Total Trips (if simultaneous construction)
Excavation Trips (one-way trips) ²	100 (total) ³ Up to 2 trips/day	Up to 460 trips/day (over 18 months)	16 trips/day (over 8 months)	8 trips/day (over 4 months)	Up to 486 trips/day (over 4 months)
Delivery Trips (one-way trips)	2,800 trips (total) ⁴ Up to 8 trips/day (over 18 months)	15,400 trips (total) ⁵ Up to 40 trips/day (over 18 months)	500 trips (total) ⁶ Up to 2 trips/day (over 3 years)	320 trips (total) ⁷ Up to 2 trips/day (over 2 years)	19,020 trips (total) Up to 52 trips/day (over 18 months)
Worker Trips (one-way trips)	Crew size of 25 per heading (two headings) 100 trips/day	Crew size of 35 (up to two crews) Up to 140 trips/day	Crew size of 20 (one crew) 40 trips/day	Crew size of 20 (one crew) 40 trips/day	Up to 320 trips/day
Total Daily Trips (one-way trips) ⁸	Up to 110 trips/day (over 18 months)	Up to 640 trips/day (over 18 months)	Up to 58 trips/day (over 8 months)	Up to 50 trips/day (over 4 months)	Up to 858 trips/day (over 4 months)
Estimated Duration	18-24 months	18-36 months	36 months	24 months	

¹ Vehicle trip is defined as a one-way vehicle movement with its origin or destination at the work site. The number of excavation trucks is estimated by dividing the cubic yards (cy) of material by the truck capacity in cy per truck, and the number of truck trips is twice the number of trucks because each truck has to enter and leave the work site. The number of worker vehicle trips is twice the number of workers because each worker arrives at the work site in the morning and departs from the work site in the evening.

² Excavation trips are assumed based on a 20 cubic yard truck capacity, estimated excavation volume and duration.

³ Material excavated during pipeline construction would be temporarily stockpiled adjacent to the trench, and the great majority of the excavated spoils would be used for backfill, with oversized rocks and displaced excavated material spread within the Santa Ana River Wash. It is estimated that 1,000 cubic yards of soil would be exported from the site.

⁴ Delivery trips based on 250 soil trucks, 667 concrete trucks (9 cy trucks), 32,000 linear feet of pipe, 1,700 tons of rebar, and other deliveries.

⁵ Delivery trips based on 167 concrete trucks, 1,500 asphalt concrete trucks, 6,000 soil trucks and other deliveries.

⁶ Delivery based on 222 concrete trucks and other deliveries.

⁷ Delivery based on 155 concrete trucks and other deliveries.

⁸ Total vehicle trips per day includes excavation, delivery, and worker commute trips occurring during the five work days a week for the duration of overlapping construction activities.

NOTE: The Cherry Valley Pump Station project component is not included because traffic generated during the three- to six-month construction period at that site would be negligible (limited to the delivery of the pump and commute trips by the five workers needed to install the pump).

SOURCE: ESA, based on construction activity information provided by DWR, 2008

Avenue, Wabash Avenue and Opal Avenue, while I-10, I-210 and SR 38, Crafton Avenue and Garnet Street would be used to access work sites in proximity to the Crafton Hills Pump Station. Work sites between the termini could be accessed by any of these local access roadways.

The installation of the 72 and 78 inch diameter pipelines would use open trench installation techniques. The trench width for the pipeline installation is estimated to be approximately 40 to 120 feet, with a depth of 14 to 50 feet. The pace of work is estimated to average about 80 feet per day. Approximately 550,000 cy of material would be excavated during pipeline construction. The excavated material would be stockpiled in staging areas within the construction corridor. The material that could not be used as backfill would be spread on-site. It has been estimated that only about 1,000 cy of soil would be exported from the work site (i.e., a total of about 50 trucks [100 one-way truck trips] over the 18- to 24-month construction period). Approximately 5,000 cy

of soil (250 trucks, 20-cy capacity) and 6,000 cy of concrete (667 trucks, 9-cy capacity) would be imported for use as engineered backfill and road pavement. Pipe, rebar, and other material would be delivered as needed over the 18- to 24-month construction period. Imported materials would be delivered to stockpiles near the open trench or in the contractor's staging yard. As shown in Table 3.11-1, a total of about 2,800 one-way truck trips would be needed to deliver the needed material, which would generate up to an average of about 8 one-way truck trips per day (over an 18-month period).

The impact on traffic flow conditions on area roads from construction traffic generated by the proposed pipeline installation (i.e., 100 one-way worker trips per day, and up to about 100 one-way truck trips per day) would be less than significant because the estimated number of daily truck trips (spread over the course of the 11-hour work day) would be minimal, and the commute trips by construction workers would occur outside of the peak traffic hours (i.e., the inbound commute trips would primarily end before 7:00 a.m., and the outbound commute trips would primarily start after 6:00 p.m.). See below (page 3.11-12) for a description of the worst-case traffic impacts (i.e., if there was simultaneous construction of the project components).

Citrus Reservoir

The proposed Citrus Reservoir would be located east of Opal Avenue and north of San Bernardino Avenue in an area where private farm roads provide limited access to a citrus grove. Construction-generated traffic would use roadways such as but not limited to: I-10, I-210 and SR 38, Wabash Avenue, San Bernardino Avenue, Lugonia Avenue, Orange Street, and Opal Avenue. Alternatively, the site could be accessed from the north via Cone Camp Road, in which case construction-generated traffic would use I-210, 5th Street, Greenspot Road and Cone Camp Road/Opal Avenue. Construction activities related to the new reservoir would generate vehicle trips by construction workers and by trucks transporting material to and from the site. Construction crews would number approximately 35 workers for a 36-month construction period (i.e., approximately 780 working days assuming work occurring Monday to Friday for three years). It is assumed there would be up to two work crews (with about 35 workers each) if an 18-month construction period were planned, and worker commute trips would total (for the two crews) up to about 140 one-way trips per day (i.e., 70 trips to the site in the morning and 70 trips away from the site in the evening).

Excavation would generate about 1,800,000 cy of material that would be hauled to one of the local aggregate mines within the Santa Ana River Wash, for use as construction aggregate. The proposed truck route to the aggregate mines within the Wash, identified on Figure 3.11-1, would follow San Bernardino Avenue to Orange Street where it would proceed north, crossing the Santa Ana River, and trucks would enter the existing gravel quarry on the north side of the Santa Ana River Wash; empty trucks returning to the reservoir site would reverse that route. The haul truck route is approximately four miles in each direction. Using an average haul load of 20 cy per truck, this would amount to an average of up to approximately 230 haul trucks per day (460 daily one-way trips) over an approximate 18-month period.

An alternate truck haul route to the river wash (via Lugonia Avenue) also is under consideration.⁴ This truck route would require trucks to head south on Opal Avenue from the project site to SR 38 – Mentone Boulevard (or westbound on San Bernardino Avenue to Wabash Avenue, and southbound on Wabash Avenue to SR 38), turn west onto SR 38 (East Lugonia Avenue), which is a City of Redlands designated truck route, and then head north on Tennessee Street to merge onto I-210. From I-210, trucks would exit onto eastbound 5th Street, and then would turn south onto Orange Street, from where excavated material would be delivered to the gravel quarry within the Santa Ana River Wash. Empty trucks returning to the reservoir site would head south on Orange Street, turn left onto SR 38 – Lugonia Avenue, and return to the reservoir site via roads used on the outbound trip. The haul truck route is about 8.5 miles for loaded trucks, and about 5 miles for the return trip by empty trucks.

Approximately 1,500 cy of concrete (167 trucks, 9-cy capacity), 27,000 tons of asphalt concrete or other materials (1,500 trucks, 18-ton capacity), and 120,000 cy of soil (6,000 trucks, 20-cy capacity) would be imported for the reservoir construction. There also would be irregular deliveries of other construction components, which would be shipped on demand to the construction site throughout the construction period. As shown in Table 3.11-1, a total of about 15,400 one-way truck trips would be needed to deliver the needed material, which would generate up to an average of about 40 one-way truck trips per day over an 18-month construction period.

Construction traffic generated by the proposed new reservoir (i.e., 140 one-way worker trips per day, and up to about 500 one-way truck trips per day) would affect roadway capacities and intersection operations on the selected haul route due to increased traffic volumes, and the slower movements and larger turning radii of the trucks compared to passenger vehicles. Construction-related traffic occurring on weekdays during the hours of 7:00 to 9:00 AM and 4:00 to 6:00 PM would coincide with peak-period traffic volumes on area roadways, and therefore, would have the greatest potential to impede traffic flow. However, the impact on traffic flow conditions on area roads from construction traffic generated by construction of the Citrus Reservoir (the highest trip-generating component of the proposed project) would be less than significant because its trip generation would be less than the total (simultaneous construction) project, which as described below (page 3.11-12) would have a less-than-significant impact on traffic flow.

Citrus Pump Station

The site of the proposed Citrus Pump Station is located within an existing citrus grove south of the Santa Ana River, north of San Bernardino Avenue, and east of Opal Avenue. Construction-generated traffic would use roadways such as, but not limited to: I-10, I-210, SR 38, Wabash Avenue, San Bernardino Avenue, Lugonia Avenue, and Opal Avenue. The proposed construction would generate vehicle trips by construction workers and by trucks transporting material to and from the site. Construction crews would number approximately 20 workers, and construction worker commute trips over a period of 36 months (i.e., approximately 780 working days

⁴ The alternate haul route are selected to provide DWR and affected jurisdictions with options for transporting excavated material to the river wash. San Bernardino Avenue provides the shortest route, but is not a designated truck route. Lugonia Avenue is a designated truck route, but the configuration of its intersection with Orange Street would not accommodate right turns by haul trucks from westbound Lugonia Avenue to northbound Orange Street.

assuming work occurring Monday to Friday for three-years) would total about 40 one-way trips per day (i.e., 20 trips to the site in the morning and 20 trips away from the site in the evening).

Excavation would generate about 50,000 cy of material, of which approximately 25,000 cy would be retained at the site. Exported materials would total an estimated 25,000 cy. Using an average haul load of 20 cy per truck, there would be about 8 daily haul truck round trips (16 one-way trips per day) generated over an eight-month period. About 2,000 cy of concrete (222 trucks, 9-cy capacity) would be imported for construction of the pump station. There also would be irregular deliveries of other construction components, which would be shipped on demand to the construction site throughout the construction period. As shown in Table 3.11-1, a total of about 500 one-way truck trips would be needed to deliver the needed material, which would generate up to an average of up to about 2 one-way truck trips per day.

The impact on traffic flow conditions on area roads from construction traffic generated by the proposed pump station (i.e., 40 one-way worker trips per day, and up to about 18 one-way truck trips per day) would be less than significant because the estimated number of daily truck trips (spread over the course of the 11-hour work day) would be minimal, and the commute trips by construction workers would occur outside of the peak traffic hours (i.e., the inbound commute trips would primarily end before 7:00 a.m., and the outbound commute trips would primarily start after 6:00 p.m.). See below (page 3.11-12) for a description of the worst-case traffic impacts (i.e., if there were simultaneous construction of the project components).

Crafton Hills Pump Station Expansion

Traffic-generating construction activities related to the proposed expansion of the Crafton Hills Pump Station would involve extension of the existing building to accommodate new pump units, motors, valves, piping, and an additional forebay tank. Construction crews would number approximately 20 workers, and construction worker commute trips over a period of 24 months (780 working days) (i.e., approximately 520 working days assuming work occurring Monday to Friday for two-years) would total about 40 one-way trips per day (i.e., 20 trips to the site in the morning and 20 trips away from the site in the evening).

Approximately 12,000 cy of soil would be excavated, of which approximately 6,000 cy would be retained at the site (the other 6,000 cy would be removed from the site). Using an average haul load of 20 cy per truck, there would be 4 haul trucks per day (8 daily one-way trips) over a 4-month period. Approximately 1,400 cy of concrete (155 trucks, 9-cy capacity) would be imported to the site over the 24-month construction period. There also would be irregular deliveries of other construction components, which would be shipped on demand to the construction site throughout the construction period. As shown in Table 3.11-1, a total of about 320 one-way truck trips would be needed to deliver the needed material, which would generate up to an average of up to about 2 one-way truck trips per day.

The impact on traffic flow conditions on area roads from construction traffic generated by the proposed expansion of the pump station (i.e., 40 one-way worker trips per day, and up to about 18 one-way truck trips per day) would be less than significant because the estimated number of

daily truck trips (spread over the course of the 11-hour work day) would be minimal, and the commute trips by construction workers would occur outside of the peak traffic hours (i.e., the inbound commute trips would primarily end before 7:00 a.m., and the outbound commute trips would primarily start after 6:00 p.m.). See below (page 3.11-12) for a description of the worst-case traffic impacts (i.e., if there were simultaneous construction of the project components).

Cherry Valley Pump Station

The proposed project calls for the installation of one new 24 cfs pump within the existing pump station. No construction activities would occur from this phase of the project as the installation would occur within the limits of the existing building. Traffic generated from this project component would be limited to the delivery of the pump and worker trips required to install the pump. Traffic generated from this project would be negligible. Impacts would be less than significant.

Worst-Case Scenario: simultaneous construction of all project components

In order to provide a conservative analysis of whether simultaneous construction of all project components would cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in congestion at intersections⁵), and whether the project would exceed, either individually or cumulatively, a level of service standard established by the San Bernardino County congestion management agency, the following assumptions were made:

- Project-generated truck traffic volumes used for LOS calculations were adjusted to reflect a passenger car equivalent (PCE) of 3.0 for haul trucks, and 2.0 for delivery trucks (i.e., a heavy haul truck would be equivalent to three passenger cars, and a medium-size delivery truck would be equivalent to two passenger cars).
- Worker commute trips to and from the work sites would occur during the AM and PM peak traffic hours (even though the proposed work hours of 7:00 AM to 6:00 PM would mean that the inbound commute would primarily end before 7:00 AM, and the outbound commute would primarily start after 6:00 PM).
- All project-generated peak-hour trips by workers and delivery trucks would travel on San Bernardino Avenue and Orange Street (to and from I-210 and I-10), ignoring that some of those trips could be made to/from I-10 via Crafton Avenue (to/from areas southeast of the project sites).

As stated above, intersections along the alternative haul routes all currently operate at an acceptable LOS C or better, except at the Caltrans-controlled intersection of San Bernardino Avenue / I-210 Southbound Ramps, where acceptable LOS D conditions prevail during the p.m. peak hour (City of Redlands, 2008).⁶

⁵ The focus of analysis is on traffic LOS at intersections because traffic conditions in urban areas are affected more by the operations at the intersections than by the capacities of the local streets because traffic control devices (signals and stop signs) at intersections control the capacity of the street segments.

⁶ The City of Redlands (General Plan Goal 5.20) has identified a minimum LOS standard of LOS C for City intersections. The minimum acceptable LOS established by Caltrans for freeway ramp intersections is LOS D.

The overlap of highest traffic-generating construction activities would occur during a four-month period (the duration of excavation for the Crafton Pump Station Expansion). Other periods during the overall approximate three-year project construction would have lower trip generation than during that four-month period. As shown in Table 3.11-1, a total of up to about 858 one-way vehicle trips per day would be generated during those four months (320 one-way trips by construction workers, up to 486 one-way trips by excavation haul trucks, and up to 52 one-way trips by delivery trucks). Using the above-cited conservative assumptions, the construction worker commute trips would total 160 inbound vehicle trips during the AM peak hour and 160 outbound vehicle trips during the PM peak hour. As opposed to those worker commute trips, truck trips would be spread throughout the 11-hour work day, and the estimated up to 486 daily one-way haul truck trips (1,458 one-way PCE trips) would average up to about 132 one-way PCE trips per hour (66 full PCE to the Santa Ana Wash, and 66 returning empty PCE). Similarly, the estimated up to 52 daily one-way delivery truck trips (104 one-way PCE trips) would average up to about 10 one-way PCE trips per hour (5 PCE to the work site, and 5 PCE away from the work site) over the course of an 11-hour work day.⁷

All of the haul truck trips were assigned to travel the above-described alternative truck routes to/from the aggregate mines within the Wash (see page 3.11-9). Construction worker commute trips and delivery truck trips were assigned 60 percent to I-210 (a straight path on San Bernardino Avenue between the work sites and the freeway interchange), and 40 percent to I-10 (inbound trips on northbound Orange Street, a right turn onto San Bernardino Avenue, and proceed to the work site; outbound trips to reverse that route).

As shown in **Table 3.11-2**, levels of service at each of the key intersections affected by the project would remain acceptable (unchanged from existing conditions) with the addition of project-generated traffic under either alternative haul route, although the average delay would increase in some cases. The impact of simultaneous construction of all project components on traffic LOS conditions would be less than significant. Therefore, quantitative analysis of traffic impacts from the construction of individual (lower trip-generating) project components is unnecessary.

LOS standards for roadways that are part of the San Bernardino Congestion Management Program (CMP) network, as well as desired operation levels on City of Redlands streets, are intended to regulate long-term traffic increases from operation of new development, and do not apply to construction projects, including projects with a duration of three-years. As such, the proposed project would not exceed level-of-service standards established by San Bernardino County for designated CMP roadways, or established in the Redlands General Plan for City intersections.

Although the impact of simultaneous construction of all project components (and of construction of individual project components) on traffic LOS conditions would be less than significant, The

⁷ Another way to judge the effect of the project-generated increases in trucks on local roadways is that the up to 269 trucks per day (538 one-way trips) would result in one truck leaving the construction site(s) approximately every 2 to 3 minutes, and similarly one truck returning to the construction site(s) approximately every 2 to 3 minutes.

TABLE 3.11-2
AM AND PM PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS) AND AVERAGE STOPPED
DELAY IN SECONDS PER VEHICLE – EXISTING AND EXISTING PLUS PROJECT CONDITIONS¹

Intersection	Traffic Control	Existing (2007)		Existing + Project (Haul Route 1) ²		Existing + Project (Haul Route 2) ³	
		LOS	Delay	LOS	Delay	LOS	Delay
AM Peak Hour							
1. San Bernardino Avenue / Church Street	AWSC ⁴	B	10.6	B	12.3	B	14.8
2. San Bernardino Avenue / Orange Street	Signal	B	17.2	B	17.3	B	17.4
3. Orange Street / Pioneer Street	AWSC ⁴	C	19.0	C	20.3	C	21.5
4. Lugonia Avenue / Church Street ⁵	Signal	B	14.8	B	14.8	B	14.8
5. Lugonia Avenue / Orange Street	Signal	B	17.6	B	19.6	B	18.7
6. Lugonia Avenue / Tennessee Street ⁵	Signal	C	24.2	C	25.2	C	24.2
7. San Bernardino Ave. / Tennessee Street	Signal	C	25.2	C	25.7	C	25.2
8. San Bernardino Ave. / Citrus Plaza Drive	Signal	C	23.8	C	23.8	C	23.8
9. 5th Street / Boulder Avenue ⁵	Signal	B	12.9	B	12.9	B	12.9
PM Peak Hour							
1. San Bernardino Avenue / Church Street	AWSC ⁴	B	11.7	B	13.6	C	17.0
2. San Bernardino Avenue / Orange Street	Signal	B	17.2	B	17.4	B	17.9
3. Orange Street / Pioneer Street	AWSC ⁴	C	19.0	C	20.2	C	22.1
4. Lugonia Avenue / Church Street ⁵	Signal	B	15.7	B	15.7	B	15.7
5. Lugonia Avenue / Orange Street	Signal	B	16.1	B	17.3	B	16.7
6. Lugonia Avenue / Tennessee Street ⁵	Signal	C	27.6	C	28.0	C	27.6
7. San Bernardino Ave. / Tennessee Street	Signal	C	31.5	C	33.0	C	31.6
8. San Bernardino Ave. / Citrus Plaza Drive	Signal	D	36.0	D	36.3	D	36.3
9. 5th Street / Boulder Avenue ⁵	Signal	B	15.8	B	15.8	B	15.8

- ¹ The LOS and delay represent conditions for the overall intersection. LOS descriptions and corresponding ranges of average control delay are shown in Table A-1 (**Appendix F**). LOS were determined using the analysis methodologies presented in the 2000 *Highway Capacity Manual* (using the TRAFFIX computer analysis software).
- ² Alternate Haul Route 1: The outbound (full truck load) path would be southbound on Opal Avenue to Lugonia Avenue (or westbound on San Bernardino Avenue to Wabash Avenue, and southbound on Wabash Avenue to Lugonia Avenue); westbound on Lugonia Avenue (designated truck route) to Tennessee Street, northbound on Tennessee Street to San Bernardino Avenue / Northbound On-Ramp to Interstate 210 (I-210), northbound on I-210 to 5th Street, eastbound on 5th Street (designated truck route) to Boulder Avenue, and southbound on Boulder Avenue – Orange Street to signalized intersection with access road to the existing gravel quarry on the north side of the Santa Ana River Wash. Empty trucks returning to the reservoir site would exit (left turn) onto Orange Street; southbound on Orange Street to Lugonia Avenue; and return to the reservoir site via roads used on the outbound trip.
- ³ Alternate Haul Route 2: The outbound (full truck load) path would be westbound on San Bernardino Avenue to Orange Street, northbound on Orange Street, crossing the Santa Ana River, to signalized intersection with access road to the existing gravel quarry on the north side of the Santa Ana River Wash. Empty trucks returning to the reservoir site would reverse that route.
- ⁴ AWSC = All-Way Stop Control (unsignalized) intersection.
- ⁵ Project-generated trips would not travel through this intersection under the Alternate Haul Route 2 scenario.

SOURCES: City of Redlands Draft Joint Program/Project EIR for Concept Plan No. 7 (Redlands Commons / Trojan Groves) and the Redlands Commons Development Plan (2008), and ESA

following mitigation measures are recommended to reduce project effects (primarily, but not only, for pipeline installation).

Mitigation Measures

TR-1: DWR shall provide staging areas for excavated material generated during pipeline installation within the construction zone or at locations accessible by construction roads to minimize use of local roadways for hauling of excavated materials.

TR-2: DWR shall obtain the necessary road encroachment permits prior to construction and would comply with the applicable conditions of approval. Road encroachment permits may be necessary for construction within the following roadways: Crafton Avenue, Madeira Avenue, Garnet Street, Cone Camp Road, and Opal Avenue.

TR-3: DWR shall require the contractor to prepare a Traffic Control Plan in accordance with professional engineering standards prior to construction within roadways. The Traffic Control Plan could include the following requirements:

- DWR shall maintain access for local land uses including residential driveways, commercial properties, and agricultural lands during construction activities.
- Emergency services access to local land uses would be maintained at all times for the duration of construction activities. Local emergency service providers would be informed of road closures and detours.
- DWR shall post advanced warning of construction activities to allow motorists to select alternative routes in advance.
- DWR shall arrange for a telephone resource to address public questions and complaints during project construction.
- DWR shall establish methods for accommodating the construction-generated parking demand.
- For roadways requiring full closures, DWR (and the construction contractor) shall develop circulation and detour plans to minimize impacts to local street circulation. This would include the use of signing to guide vehicles onto alternative roads around the construction zone.
- DWR shall ensure that the contractor does not allow trucks hauling excavated material to leave the project site at an interval faster than one truck every two minutes. This required spacing will reduce the anticipated less-than-significant project-generated roadway and intersection congestion.

TR-4: DWR shall require the contractor to prepare a Haul Route Plan that will include roadway safety measures, roadway maintenance, and signage requirements along roads used as haul routes. The safety measures shall include, but not be limited to, crossing guard funding for schools and recreational parks along the haul route. If the haul route using San Bernardino Avenue to Orange Street were selected, the safety measures shall include prohibition of on-street parking on the northeast corner of the San Bernardino Avenue / Orange Street intersection (to facilitate right turns by haul trucks from westbound San Bernardino Avenue to northbound Orange Street). The Plan shall be submitted to the County of San Bernardino, and the City of Redlands (and the City of Highlands, as appropriate) for review.

Significance Conclusion

Impacts would be less than significant. The proposed project would not exceed level-of-service standards established by San Bernardino County for designated CMP roadways, or established in the Redlands General Plan for City intersections, even if simultaneous construction of all project components were to occur. Although the project would not

exceed to the LOS standard, implementation of Mitigation Measures TR-1 through TR-4 would reduce impacts to traffic conditions.

3.11.3.2 Effects to Road Accessibility

This section discusses the following CEQA Checklist question:

Would the project result in inadequate emergency access?

Significance Threshold

The project would have a significant impact if it resulted in substantial adverse effect on traffic and emergency vehicles due to road closures and restrictions in road accessibility.

Impact Analysis

As described above, installation of the proposed pipelines would use open trench installation techniques, with the trench width estimated to be 40 to 120 feet wide. There are public roadways within currently proposed pipeline segments for which a 40-foot-wide trench width would result in insufficient remaining width to maintain alternate one-way traffic flow. For example, under Alternative Alignment 2, portions of Crafton Avenue, Madeira Avenue, Opal Avenue, and Garnet Street would need to be closed to all through-traffic except emergency vehicles during work hours, with detour routing via roads parallel to the affected roads (e.g., Agate Avenue, and SR 38). Garnet Street also would be subject to temporary full road closure under Alternative Alignments 1 and 3 when the pipeline installation crosses that road. During construction, access to local residences, commercial properties, and agricultural lands could be restricted. Per Mitigation Measure TR-3, DWR would prepare a Traffic Control Plan that would maintain access to local land uses at all times during construction activities. In addition, Mitigation Measure TR-2 would require DWR to obtain the necessary road encroachment permits prior to construction.

Mitigation Measures

Implement Mitigation Measures TR-2 and TR-3.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measures TR-2 and TR-3 would ensure that adequate emergency access is maintained during construction.

3.11.3.3 Effects on Parking

This section discusses the following CEQA Checklist question:

Would the project in inadequate parking capacity?

Significance Threshold

The project would have a significant impact if it resulted in substantial adverse effect on parking availability due to construction workers, construction related vehicles, and or parking for operators.

Impact Analysis

Proposed improvements would create parking demand for construction workers and construction vehicles as crews move along the project corridor. Assuming each worker drives alone to each day's work location, a crew could require up to 35 parking spaces. Given the locations of the work areas (i.e., generally separated from public roads) and the area of nearby undeveloped land, construction workers could park in the vicinity of the active work area without affecting the local residential or commercial parking supply. The traffic control plan, identified in Mitigation Measure TR-3, would require the construction contractor to establish methods for accommodating the construction-generated parking demand. Because the project's parking demand would not affect traffic flow on area roadways, and would not displace any current parking, the impact would be less than significant.

Mitigation Measures

Implement Mitigation Measure TR-3.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measure TR-3, requiring that the construction contractor establish methods for accommodating construction-generated parking demand, would reduce impacts to a less-than-significant level.

3.11.3.4 Effects to Public Roadway Safety

This section discusses the following CEQA Checklist question:

Would the project substantially increase hazards due to a design feature (i.e., sharp curves or dangers intersections) or incompatible uses (i.e., farm equipment)?

Significance Threshold

The project would have a significant impact if it resulted in substantial adverse effect on safety for vehicles, bicyclists, and pedestrians on public roadways.

Impact Analysis

Heavy equipment operating adjacent to or within a road right-of-way could increase the risk of collisions. Construction-generated trucks on proposed project corridor roadways would interact

with other vehicles. Potential conflicts also could occur between construction traffic and bicyclists and pedestrians. Implementation of a traffic control plan would reduce this hazard.

Mitigation Measures

Implement Mitigation Measures TR-2 and TR-3.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measures TR-2 and TR-3 would reduce construction related traffic hazards by requiring road encroachment permits and the implementation of a traffic control plan.

3.11.3.5 Effects to Roadways

This section discusses the following significance threshold question:

Would construction activities for the project increase wear-and-tear on the designated haul routes used by construction vehicles to access the project work sites?

Significance Threshold

The project would have a significant impact if it resulted in substantial adverse effect on roadways by deteriorating the pavement on the haul routes.

Impact Analysis

The use of large trucks to transport equipment and material to and from the project work sites could affect road conditions on the designated haul routes by increasing the rate of road wear. The degree to which this impact would occur depends on the design (pavement type and thickness) and existing condition of the road. Major arterials and collectors are designed to accommodate a mix of vehicle types, including heavy trucks. Local streets are generally not built with a pavement thickness that would withstand substantial truck traffic volumes. Haul truck traffic along San Bernardino Avenue from the proposed reservoir site to the aggregate mines on Orange Street could deteriorate roadway surfaces. Implementation of Mitigation Measure TR-5 would minimize the impact to a less-than-significant level.

Mitigation Measures

TR-5: DWR shall monitor and maintain roadway surfaces along haul routes for the duration of the hauling period and return roadways impacted by construction to a structural condition equal to that which existed prior to construction activity.

Significance Conclusion

Less than significant with mitigation. Implementation of Mitigation Measure TR-5 would reduce effects to the designated haul routes by requiring that the roadways are monitored and returned to their pre-construction condition.

3.11.3.6 Air Traffic Patterns

This section discusses the following CEQA Checklist question:

Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

Significance Threshold

The project would have a significant impact if it resulted in a change to the air traffic patterns that would result in increased safety risks. A change in air traffic patterns could result from increased air traffic from an expanded runway. A larger volume of flights could increase the safety risk. A change in air traffic patterns could also result from a runway reconfiguration which would place new sensitive land uses with an air traffic pattern zone.

Impact Analysis

As described in Section 3.8 (Land Use) the proposed project location is located within the Redlands Municipal Airport land use plan. However, the construction and operation of the proposed project would not result in changed air traffic patterns or an increase in air traffic levels or a change in location which would result in a substantial safety risk. No impact would result.

Mitigation Measures

None required.

Significance Conclusion

No impact. Construction and operation of the proposed project would not result in a change in air traffic patterns.

3.11.3.7 Alternate Transportation

This section discusses the following CEQA Checklist question:

Would the project conflict with adopted policies, plans, or programs supporting alternative transportation (i.e., bus turnouts, bicycle racks)?

Significance Threshold

The project would have a significant impact if it conflicted with adopted plans supporting alternative transportation. This could result from the construction on land designed from bike, rail, or bus transportation routes.

Impact Analysis

As discussed in Section 3.8 (Land Use) and shown in Figure 3.8-8, the proposed project area is located near planned bike and multi-use trails. The project would not affect any bus routes or alternative transportation systems. Once constructed, the underground pipeline would not impede the use of bike paths planned for the area or require revised bus routes. Construction and operation of the proposed project would not conflict with plans and policies supporting alternative transportation. The project would have less-than-significant impacts on alternative transportation.

Mitigation Measures

None required.

Significance Conclusion

Less than significant. Construction and operation of the proposed project would not conflict with plans or policies supporting alternative transportation.

3.11.3.9 Summary of Impacts and Mitigation Measures

Table 3.11-3 presents the impacts and mitigation summary for Transportation and Traffic.

**TABLE 3.11-3
IMPACTS AND MITIGATION SUMMARY**

Proposed Project Impact	Mitigation Measure	Significance after Mitigation
Construction Traffic: Construction activities for the proposed project would have a less-than-significant impact on roadway traffic with mitigation.	TR-1 through TR-4	Less than significant
Effects to Road Accessibility: Construction of the proposed new pipeline would have a less-than-significant impact on restricting access to public roads.	TR-2 and TR-3	Less than significant
Effects on Parking: Construction activities for the proposed project would have a less-than-significant impact on the demand for parking.	TR-3	Less than significant
Effects to Public Roadway Safety: Construction activities would have a less-than-significant impact traffic safety hazards for vehicles, bicyclists and pedestrians on public roadways.	TR-2 and TR-3	Less than significant
Effects to Roadways: Construction activities would have a less-than-significant impact on haul routes and roads used by construction vehicles to access the project work sites with mitigation.	TR-5	Less than significant
Air Traffic Patterns: Construction and Operation of the proposed project would have a less-than-significant impact on air traffic patterns.	None Required	No impact
Alternative Transportation: Construction and operation of the proposed project would have less-than-significant impacts on alternative modes of transportation.	None Required	Less than significant

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CHAPTER 4

Cumulative Impacts

4.1 CEQA Analysis Requirements

A cumulative impact refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The *CEQA Guidelines* require that EIRs discuss the cumulative impacts of a project when the project's incremental effect is "cumulatively considerable," meaning that the project's incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects.¹ According to *CEQA Guidelines* §15130(a) and (b), the purpose of this section is to provide a discussion of significant cumulative impacts which reflects "the severity of the impacts and their likelihood of occurrence." The *CEQA Guidelines* indicate that the discussion of cumulative impacts should include:

- Either: (A), a list of past, present, and probable future projects producing related or cumulative impacts; or (B), a summary of projections contained in an adopted general plan or similar document, or in an adopted or certified environmental document, which described or evaluated conditions contributing to a cumulative impact;
- A discussion of the geographic scope of the area affected by the cumulative effect;
- A summary of expected environmental effects to be produced by these projects; and,
- Reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.

The analysis of cumulative effects in this chapter focuses on the effects of concurrent construction of the proposed project with other spatially and temporally proximate projects. As such this analysis relies on a list of projects that have the potential to contribute to cumulative impacts in the project area.

4.2 Related Projects

This analysis considers the impacts of Phase II of the East Branch Extension in combination with potential environmental effects of other projects in the project area. "Other projects," also referred to as "cumulative projects" include recently completed projects, projects currently under construction, and future projects currently in development. The potential for projects to have a cumulative impact depends on both geographic location as well as project schedule.

¹ *CEQA Guidelines* Section 15130, 15065, as amended January 1, 2000.

4.2.1 Geographic Scope

The geographic area affected by cumulative projects varies depending on the environmental topic. For example, construction noise impacts would be limited to areas directly affected by construction noise, whereas the area affected by a project's air emissions generally includes the entire air basin, and impacts associated with aesthetics would include the affected viewshed.

The proposed project is located in southwestern San Bernardino County within the cities of Redlands and Highland, and the unincorporated community of Mentone. This chapter considers the potential cumulative effects of the project in combination with development projects occurring in these areas and in the wider scope of coverage, including the cities of San Bernardino, Loma Linda, Grand Terrace, and Colton to the west, Yucaipa and Calimesa to the southeast and northern Riverside County to the south.

4.2.2 Project Timing

As noted above, projects considered in this analysis include those that have recently been completed, are currently under construction, or are in planning process. Schedule is particularly relevant to the consideration of cumulative construction-related impacts, since construction impacts tend to be relatively short-term. However, for future projects, construction schedules are often broadly estimated and can be subject to change. Although the timing of the future projects described in Section 4.2.4 are likely to fluctuate due to schedule changes or other unknown factors, this analysis assumes these projects would be implemented concurrently with construction of Phase II of the East Branch Extension, between 2009 and 2012. The East Branch Extension Phase II project would have a three-year construction period.

4.2.3 Type of Projects Considered

As described in **Chapter 3** of this EIR, the majority of impacts associated with implementation of the proposed project are related to project construction activities, rather than long-term project operation. Therefore, the project could contribute to cumulative effects when considered in combination with impacts of other construction projects in the project area. For this analysis, other past, present, and reasonably-foreseeable future construction projects, particularly other infrastructure projects, in the area have been identified. Long-term cumulative impacts of the project in conjunction with the other projects in the area are assessed as well.

4.2.4 Description of Cumulative Projects

Table 4-1 lists past, present, and future projects that could potentially contribute to cumulative impacts within the project area. A brief description of the larger-scale projects or projects in the immediate vicinity of the proposed project area is provided after the table. In addition to the projects listed in Table 4-1, additional development that has not been identified as of this time, could occur within the project area, as planned by the jurisdictions near the project area.

**TABLE 4-1
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA**

Planning Jurisdiction	Project	Project Status / Construction Dates	Location
Highland	Boulder Ave., Baseline, and Greenspot Road Bridges	2009-2011	Highland
Highland	San Manuel Band of Mission Indians Victoria Development, 12-acre mixed-use hotel	Under construction 2007-2008	Highland
Highland	Mission Development, 80-acre mixed-use residential	In final design phase	Highland
Highland	Drainage improvements	2008-2012	Highland- Baseline St., Victoria Ave., Highland Ave., Sycamore St., Sterling Ave.
Highland	Greenspot Rd. widening, S-curve realignment, improvements	2008-2011	Highland
Highland	Greenspot Project. Development of a 1,650 acre property with approx. 5,000 residential units, commercial, schools, and other supporting uses.	Feasibility, planning, and entitlement phases.	East Greenspot Road
Redlands	Redlands Sport Park, construction on remaining 45 acres, the final phase of 115-acre sport park development.	Cleared for construction by 2010	Redlands, N. side of San Bernardino Ave between Dearborn and Wabash Aves.
Redlands	MKJ-McCalla Investments, LLC- 9.5-acre business park	2007+	Redlands, east of Nevada St., north of Redlands Blvd., south of railway
Redlands	Olympic Barrington Partnership, 9.6-acre business park	2007+	Redlands, east of Ford St., south of I-10, north of Patricia Dr.
Redlands	Western Realco, 20-acre warehouse	2007+	Redlands, south of San Bernardino Ave., north of Almond Ave., west of California St.
Redlands	PGP Partners, Inc., 38-acre industrial park	2008	Redlands, northeast corner of Parkford Dr. and Marshall St.
Redlands	Kaiser Foundation Hospitals, 11-acre medical building	2007-2008 under construction	Redlands, northwest corner of Lugonia Ave. and California St.
Redlands	Rossmore Enterprises, 16.32-acre light industrial development	2007	Redlands, east of Nevada St., south of Park Ave., and north of Citrus Ave.
Redlands	Redlands Municipal Airport, 3 new hangers	2007	Redlands, north of Sessums Dr. and east of Opal Ave.
Redlands	Redlands Commerce Center, 12.9-acre commercial center	Construction-winter 2008	Redlands, north of San Bernardino Ave., south of Pioneer, immediately west of I-210.
Redlands	Kensington Redlands No. 2, LLC, 15-acre industrial development	Fall 2007	Redlands, east of Marigold and north of San Bernardino Ave.
Redlands	Redlands Land Acquisition Company, L.P., 13.4-acre mixed-use commercial	2008	Redlands, south of I-10 and west of Eureka
Redlands	Iowa St. LLC, 20.62-acre industrial warehouse	2008	Redlands, Iowa St. and Park Ave.
Redlands	Redlands Christian Home Mountain View Acres, 20.34-acre assisted living facility	2007	Redlands, corner of Fifth and Wabash
Redlands	Brazer Homes, 46.65-acre development of	2007-2008 under	Redlands, south of Santa Ana

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA

Planning Jurisdiction	Project	Project Status / Construction Dates	Location
	139 single-family homes	construction	River, west of Orange, north of Pioneer
Redlands	Griffin Homes, 41.5-acre development of 31 single-family homes	2007	Redlands, east of Wabash and south of Sunset
Redlands	Arief Naftali, 30.8-acre development of 76 single-family homes	2007	Redlands, San Bernardino Ave. and Wabash
Redlands	Clive Peters, 26.8-acre development of 10 single-family homes		Redlands, Allasandro Rd. south of Sunset
Redlands	Walton Development, LLC, 30.4-acre development of 74 single-family homes	Grading plan in check	Redlands, north of San Bernardino Ave., south of Pioneer, west of Judson
Redlands	Granite Homes, 66.2-acre development of 80 single-family homes	2008	Redlands, Wabash Ave. north of Reservoir Ro.
Redlands	Walton Development, LLC, 12.1-acre development of 33 single-family homes		Redlands, Pioneer and Judson
Redlands	Bonita Development, 60-acre development of 15 single-family homes		Redlands, Live Oak Canyon Rd. at Burns Lane
Redlands	Standard Pacific Homes, 76-acre development of 209 single-family homes	City Council Approved 5/07	Redlands, Dearborn St. between Lugonia and San Bernardino Ave.
Redlands	Bruce Hinkley, 12-acre development of 4 single-family lots	Permit Application phase	Redlands, Sunset and Edgemont Drives.
San Bernardino, City of	Stater Brothers Markets Corporate Office and Distribution Center	2006-2009, offices completed 2007	Tippecanoe Ave, north of the Santa Ana River
San Bernardino County	Seven Oaks Dam	Completed	Northeast of Mentone
San Bernardino County	Woolly Star Preservation Area	Complete	Conservation area at Cone Camp Road within Santa Ana River wash
San Bernardino County	Mill Creek Development, 60 single-family homes on 240 acres	Subdivision approval in 2001	Mentone and Yucaipa
San Bernardino County	Hampton Heights, multi-use residential development with 495 single-family homes, golf course, commercial center	Perhaps 2007 (Notice of EIR Preparation published May 2006)	North of I-10 between Redlands and Yucaipa
San Bernardino County	House Land Development Co., Retail Center Expansion, 36 acres	Planning application accepted	Redlands, Alabama St. and Lugonia Ave.
San Bernardino County	Redlands Joint Venture, LLC, 1.8-million-square foot mixed-use development	Planning application accepted	Redlands- San Bernardino Ave, between Citrus Plaza Drive and Alabama
San Bernardino County	Newcastle Partners, Inc., 3 industrial buildings 186,000 sq. ft. on 9.49 acres	Planning application accepted	Redlands- Almond Ave. west of Nevada St.
San Bernardino County	Jacinto, Larry Living Trust, greenwaste, food waste, and concrete recycling center on 19 acres	Planning application accepted	Mentone, Carlsbad Ave. and Baden Ave. just east of Opal Ave.

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA

Planning Jurisdiction	Project	Project Status / Construction Dates	Location
San Bernardino County	Walden Structures, 34-acre manufacturing development and industrial complex	Planning permit approved	Mentone, east of Opal Ave. between Nice Ave. and Colton Ave.
Yucaipa	Oak Hills Marketplace, 57-acre retail development	Final Development Plan	Yucaipa, Live Oak Canyon Rd. and I-10
Yucaipa	Live Oak/Oak Glen Interchange, Widening all on and off ramps to I-10, reconstructing bridge over freeway (5 lanes) (SANBAG also lists)	2007-2009	Yucaipa, Live Oak Road, and I-10
City of San Bernardino	Fairway Homes Residential Project, 20.6 acres west of Waterman Ave., south of Dumas	2008	San Bernardino
City of San Bernardino	University Hills Specific Plan (fka Paradise Hills Specific Plan), 504 units on 228.5 acres	2008	San Bernardino
City of San Bernardino	Hospitality Lane Commercial Mixed-Use Project	2008	San Bernardino
City of San Bernardino	Martin Ranch, 353-acre development for single-family homes	2008	San Bernardino, Verdemon area just east of Devore
Loma Linda	Mt. View Ave. bridge widening	2008	Loma Linda
Loma Linda	EPA Project at San Timoteo Channel	2008	Loma Linda
Loma Linda	Lewis Homes University Village, 168 acres divided into 50 lots	Subdivision application	Loma Linda, north of Mission, south of Redlands Blvd., west of proposed Orchard Park
Loma Linda	Holland Partners, Orchard Park- 138 acres divided into 22 lots	Subdivision application	Loma Linda, north of Mission Rd., south of Redlands Blvd., west of California St. east of proposed University Village
Loma Linda	KB Homes, Mission Creek- 227 homes	2007	Loma Linda, south side of Mission St. and west of California St.
Grand Terrace	Colton Joint Unified School District, construction of a 65-acre high school		Grand Terrace- west of Taylor, east of Michigan, south of Main St.
Grand Terrace	Outdoor Adventure Center- 100-acre mixed retail and commercial development		Grand Terrace- east of I-215, north of Pico St., west of Michigan, south of Barton Rd.
Grand Terrace	Town Center- 18-acre retail and commercial development		Grand Terrace, Barton Rd. between Michigan and Canal St.
Colton	W&P La Loma Hills, Inc., zone change and subdivide to create 66 single-family homes		Colton, SW corner of Litton and Bostick
Colton	AMB Property Corporation, 71-acre industrial park	Design review 2/07	Colton, Riverside Ave.
Calimesa	Sunset Ranch- 160 units on 52 acres	Waiting for Revised plan	Calimesa, adjacent to Calimesa Blvd., northeast from I-10
Calimesa	Fiesta Oak Valley- 3,450 units	Staff Review	Calimesa, west of I-10 between County Line Road and Sandalwood

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA

Planning Jurisdiction	Project	Project Status / Construction Dates	Location
Calimesa	Heritage Oaks- 54 homes on 54 acres	PC Hearing	Calimesa, east end of County Line Road
Calimesa	Michael Novak, 15.5-acre parcel for development as a storage facility	PC Hearing	Calimesa, Desert Lawn Drive
Calimesa	Bruce Dickensen, 19 units on 11 acres	PC Hearing	Calimesa, Bryant and Douglas Streets
Calimesa	Mastercraft Homes Country Club Ridge- 264 units on 135 acres	Final map approved	Calimesa, Singleton Rd.
Calimesa	JP Ranch- 480 single-family residential units on 239 acres	Final map approved	Calimesa, south of Bryant, east of Country Club Drive
Calimesa	JP Ranch- 216 residential units on 81 acres	Final map approved	Calimesa, Calimesa, south of Bryant, east of Country Club Drive
Calimesa	Braswell, 97 units on 41 acres	Grading Plan approved	Calimesa, extension of 3 rd , south of Canyon View, east of Buena Mesa.
Calimesa	Oak Valley Core, SunCal- 3,683 units	1990 EIR certification	Calimesa
Riverside County	Spring Mountain Ranch TKC- 785-acre mixed-use development of 1,518 units		East of Mt. Vernon, south of Center, north of Box Spring Mountain Reserve
Riverside County	Springbrook Estates- 650 single-family units		West of Spring Mountain Ranch, south of Center, north of Palmyrita
United States Army Corps of Engineers	Implement Measures to Sustain the federally Listed Species as Identified in the 2002 Biological Opinion within the Woolly Star Preserve Area in San Bernardino County California	EIR/S Public Scoping Meeting May 15, 2008.	Woolly Star Preservation Area within The Santa Ana River Wash, downstream of the Seven Oak Dam.

MAJOR TRANSPORTATION PROJECTS

Caltrans	SR-38 from Wabash Ave to Crafton Ave, Widen shoulders, construct curb and sidewalk	2006-2007	(unincorporated) City of Mentone
Caltrans	I-10, westbound mixed flow lane, Live Oak Canyon Rd. to Ford St.	2007-2010	Redlands, Yucaipa
Caltrans	I-10- Install traffic monitoring systems from Colton to Redlands		San Bernardino, Loma Linda, Redlands
Caltrans	Route 66 (Foothill Blvd.) and Route 259 (Highland Ave.)- At various locations, upgrade guard rail and end treatments		San Bernardino
Caltrans	I-215 freeway widening- Orange Show Road to Rialto Avenue under-crossing.		San Bernardino
Caltrans	I-215, HOV and mixed lanes, connectors, Rt.10-210 segments 1 & 2 from south of Rialto Ave to south of Massachusetts Ave	2008	San Bernardino
Caltrans	I-215 widening, from I-15 to Scott Rd.	2010	San Bernardino
Caltrans	Widen ramps and construct auxiliary lanes at Cherry, Citrus, and Cedar Ave Interchanges	2008	City of Fontana at I-10

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA

Planning Jurisdiction	Project	Project Status / Construction Dates	Location
OmniTrans	Yucaipa Transfer facility	2009	
OmniTrans	E Street Bus Rapid Transit Corridor	2010-2012	San Bernardino, Loma Linda
SANBAG	I-10 widening through Redlands	Portion completed 2007	Redlands
SANBAG	Widening of Baseline Ave and E Street	Dates Unknown	San Bernardino and Highland
SANBAG and Metrolink	San Bernardino Transit center and inter-modal facility with space for 28 buses and new rail service from San Bernardino Depot to Redlands Depot. (SANBAG is lead agency.)	In planning phase, 2012+	San Bernardino to Redlands
MAJOR TRANSPORTATION PROJECTS (cont.)			
SANBAG	I-10 Improvements to Tippecanoe Interchange. Reconstruct Interchange and construct auxiliary lanes.	2010	San Bernardino, near Redlands
San Bernardino, City of	Mtn. View Ave. Bridge over the Santa Ana River and street widening	2008	San Bernardino, near Redlands
SANBAG	I-10 Live Oak Canyon Interchange (Yucaipa also lists)	2007-2009	Yucaipa, near Redlands
SANBAG	I-10, Live Oak Canyon to Ford Street, lane addition,	2010	Yucaipa
SANBAG	Continued work on the newly-opened I-210 Freeway through San Bernardino, I-215/I-210 high-speed connectors	Present- 2012+	San Bernardino
SANBAG	I-215 improvements	Present- 2012+	San Bernardino to Moreno Valley
SANBAG	Cal-State San Bernardino to Loma Linda Rapid Transit Line, traveling E street	2010-2012	San Bernardino
Riverside Co. Transportation Commission (RCTC)	Route 60 improvements- HOV lane, connectors, truck-climbing lane, interchange improvements	2005-2012+	Moreno Valley
RCTC	I-215 improvements- connectors, interchanges, addition of new lanes	2005-2012+	Moreno Valley
San Bernardino County	Intersection improvement on 5 th Avenue	Year 1 [Uncertain; projects not finalized for 07/08]	Mentone
San Bernardino County	San Bernardino Avenue signal installation	Year 1 [Uncertain; projects not finalized for 07/08]	Mentone
San Bernardino County	Opal Avenue rehabilitation	Year 1 [Uncertain; projects not finalized for 07/08]	Mentone
San Bernardino County	Road widening at Lugonia Ave., Nevada St.	Year 1 [Uncertain; projects not finalized for 07/08]	Redlands
San Bernardino County	Rehab and overlay on Alabama Street	Year 1 [Uncertain; projects not finalized for 07/08]	Redlands

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA

Planning Jurisdiction	Project	Project Status / Construction Dates	Location
San Bernardino County	Garnet Street Bridge Replacement	Year 1 [Uncertain; projects not finalized for 07/08]	Redlands
WATER AGENCY INFRASTRUCTURE PROJECTS			
DWR	Phase I East Branch Extension Project EIR	1997	San Bernardino, Redlands, Mentone, Highland, Santa Ana River Wash area
Metropolitan Water District	Inland Feeder Pipeline Project	complete	Santa Ana River Wash area
Metropolitan Water District	Arrowhead Tunnels	Under Construction	Waterman Canyon Area
WATER AGENCY INFRASTRUCTURE PROJECTS (cont.)			
SBVWCD	Santa Ana River Wash HCP, aka "Plan B"	2008	Santa Ana River Wash area
SBVMWD	High Groundwater Mitigation Project to increase pump and pipeline capacity, and plan for future construction of new pumps and pipelines	2007-2012+	San Bernardino, Bunker Hill Groundwater Basin
SBVWCD	Enhanced Groundwater Spreading Basins	Future planning__	Santa Ana River wash ____
SBVMWD	San Bernardino Central Feeder Project Phase I	Construction 2008	City of Redlands from Texas St. to Opal St.
SBVMWD	Central Feeder Project Phase II	Planning Stage	City of San Bernardino at Texas St., City of Redlands to Lena Rd.
SBVMWD	North Lake Area	Dates Unknown	82.4 acres in City of San Bernardino, immediately north of downtown
SBVMWD	South Lake Area	Dates Unknown	53.7 acres in San Bernardino, near I-215 and Mill Street junction
SBVMWD	Santa Ana River Construction Area- Plunge Pool Pipeline	Dates Unknown	Santa Ana River channel just below Seven Oaks Dam
SBVMWD	Morton Canyon Hydroelectric Plant	Dates Unknown	Santa Ana River channel just below Seven Oaks Dam
SGPWA	Noble Creek in-stream recharge project of unknown capacity	Unknown- in CEQA stage	Cherry Valley, Beaumont
SGPWA	Proposed EBX Extension to Cabazon	Unknown- future planning	Yucaipa to Cabazon
SGPWA	Supplemental Water Master Plan	Unknown- in beginning stages	Throughout SGPWA service area
Department of Water Resources	Crafton Hills Reservoir Enlargement and Pipeline Project	Planning Stage, construction 2008+	City of Yucaipa and San Bernardino County, Eastern Crafton Hills

SOURCES: San Bernardino National Forest Service, Schedule of Proposed Actions, 2007.
City of Highland, Commercial Activity Applications, September 2006.
City of Redlands, Capital Improvement Program List, 2006.
City of Redlands, Status of Major Projects List, July, 2007.
Caltrans, State Highway Operation and Protection Program (SHOPP), 2004.
San Bernardino Valley Municipal Water District, Upper Santa Ana River Watershed Integrated Regional Water Management Plan, 2006

Phase I of the East Branch Extension Project

During preliminary engineering studies for facility design, the Department of Water Resources identified a redesigned project. This redesigned project, which became Phase I of the East Branch Extension Project, was addressed in a 1995 Supplemental EIR and covered six major components: three modified pipeline alignments (Pipeline Reaches 1, 2 and 3); one new reservoir (Crafton Hills Reservoir); and three changed pump station layouts/locations (Greenspot Pump Station, Crafton Hills Pump Station, Cherry Valley Pump Station), as well as construction staging areas. The SEIR was certified in 1997, construction began in 2000, and project construction was completed in 2003. Phase I also provided water to the San Bernardino Valley Municipal Water District service area.

MWD Inland Feeder Pipeline

The Metropolitan Water District's Inland Feeder pipeline project was completed in 2007. The Inland Feeder pipeline project is a water delivery system located in San Bernardino and Riverside counties designed to increase Southern California's water supply, while minimizing the environmental impact on water resources in northern California. The project is designed to store large volumes of water from the State Water Project in surface storage reservoirs and groundwater aquifers for use during emergencies and drought conditions. The Inland Feeder pipeline project initiates in the foothills of the San Bernardino Mountains and stretches approximately 44 miles to its terminus at the Colorado River Aqueduct, in the city of San Jacinto.

Land Management and Habitat Conservation Plan for the Upper Santa Ana River Wash ("Plan B")

The SBVWCD is the lead agency on the Santa Ana River Wash Land Management and Habitat Conservation Plan (the Plan, referred to in some documents as "Plan B." The Plan is a cooperative effort among SBVWCD, other local agencies, corporations CEMEX USA and Robertson's Ready Mix, and the BLM to appropriately manage the area's biological, mineral, and water resources. There are essentially two fronts to plan implementation: (1) a land exchange; and (2) establishment of a conservation area. The proposed land exchange would occur between BLM and SBVWCD. Currently, SBVWCD owns land in the Santa Ana River Wash that is leased to CEMEX USA and Robertson's Ready Mix for sand and gravel mining operations. BLM owns land in the Santa Ana River Wash that has been designated as an ACEC. The Plan proposes to transfer land ownership and associated mining leases of SBVWCD land to the BLM in exchange for the ACEC land, which would then be rolled into a formal Habitat Conservation Plan area. The land exchange requires an amendment to the BLM's 1994 Management Plan of the area. A Notice of Intent to amend the 1994 plan was published in 2004. A Notice of Availability for a Draft EIS on the proposed plan amendments is planned for winter 2007. Once the land exchange occurs, the U.S. Fish and Wildlife Service and the California Department of Fish and Game would need to approve the newly-acquired, former-ACEC land as a formal Habitat Conservation Plan area under the jurisdiction of SBVWCD.

Seven Oaks Dam

The Seven Oaks Dam, located about two miles east of the project area, is one of seven independent features of the Santa Ana River Mainstem Project. The river traverses 75 miles from the headwater of the Santa Ana River east to the Pacific Ocean. Dam construction began in May 1994 and was completed in November 1999. Constructed by the U.S. Army Corps of Engineers, it is located on the upper Santa Ana River about 8 miles northeast of the city of Redlands, CA. Designed to work in tandem with the Prado Dam located 40 miles downstream, the Seven Oaks dam holds early-season floodwater. Small releases are made to maintain the downstream water supply. During flood conditions, water is withheld to prevent overburdening the downstream Prado Dam. Once flood conditions have passed, stored flood water is released at a controlled rate. At the end of the flood season, the reservoir is drained and the Santa Ana River flows unhindered.

Woollystar Preservation Area

The WSPA was established in 1998 by the Corps and local sponsors as mitigation for the construction of the Seven Oaks Dam upstream on the Santa Ana River. The WSPA is managed by an oversight committee made up of the Corps, and three flood control districts for San Bernardino County, Riverside County, and Orange County. It includes over 700 acres of alluvial fan scrub in the Santa Ana River wash downstream of Seven Oaks Dam (City of Highland, 2006). The Santa Ana woollystar is a federally endangered and state endangered plant that only occurs along the Santa Ana River. Figure 3.3-1 identifies the WSPA within the project area.

Crafton Hills Reservoir Enlargement and Pipeline Project

The Crafton Hills Reservoir Enlargement and Pipeline Project is in the planning stages and is being commissioned by DWR, SBVMWD, and SGPWA. This proposed project would expand the existing Crafton Hills reservoir into the adjacent canyon which would increase the surface water storage volume from 85 acre feet to approximately 225 acre feet. A half mile pipeline would be installed to connect the East Branch Extension Phase I, reach I pipeline to the Bryant Street Pipeline. This connection would allow continued water movement during the reservoir expansion and would serve as emergency backup infrastructure once the dam is complete. This project would not increase the water supply deliveries, but would afford operational flexibility allowing the reservoir to be filled during off-peak energy use periods of the day, effectively reducing pumping costs.

Garnet Street Bridge Replacement

Garnet Street and Bridge has been approved for building improvements in the next five-years by the San Bernardino County Transportation Department. The current two lane bridge will be replaced with a new two lane bridge.

Boulder Ave., Baseline, and Greenspot Road Bridges

The Boulder Ave and Baseline Avenue Bridge project involves replacing the current two lane bridge with a four lane bridge. The new two lane Greenspot Road Bridge is being designed by San Bernardino County. The old bridge will become part of the City of Highland's community trails. The road widening construction may result in temporary road closures.

4.3 Cumulative Effects

This section discusses the following CEQA Checklist question:

Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Significance Threshold

The project would have a cumulatively considerable impact if it resulted in substantial adverse effect when viewed in connection with the effects of past projects, the effects of other concurrent projects, and the effects of probable future projects.

Impact Analysis

Construction of Phase II of the East Branch Extension is scheduled to begin in 2009 and be completed in 2011. The potential cumulative contribution of the proposed project in conjunction with the other identified projects is discussed below by environmental topic area.

Aesthetics

The geographic scope of cumulative aesthetic impacts is the viewsheds affected by construction of the East Branch Extension Phase II pipeline, reservoir, and pump station facilities. The proposed project in conjunction with other projects in the vicinity would result in visual impacts during construction which could last up to three-years. Construction activities would require the use of heavy equipment and storage of materials at the construction zone. During construction, excavated trenches, stockpiled soils, and other materials within the construction easement would constitute negative aesthetic elements in the visual landscape that would affect views of the area. The proposed project also would result in a three-year disturbance of roadways and a citrus orchard during pipeline, reservoir, and pump station construction. Other projects that could have similar impacts include City of Highland bridge improvements on Greenspot Road, the Redlands Municipal Airport hangar construction project, the Larry Jacinto Living Trust recycling center construction, and San Bernardino County roadway improvements on Opal Avenue and State Route 38 (within the viewshed affected by the project area between Foothill Pump Station and the Citrus Reservoir and Citrus Pump Station), and the Mill Creek Development and the Garnet Street Bridge Replacement project (in the viewshed affected by the project east of the Citrus Pump Station).

As noted in Section 3.1, Aesthetics, the construction-related effects would be up to three-years long but are not considered significant on a project basis. Pipeline construction is expected to proceed at the rate of approximately 80 feet per day, so views would be affected temporarily during the construction period. In addition, the views of construction sites at the proposed Citrus Reservoir and Citrus Pump Station and Crafton Hills Pump Station expansion would be limited by existing orchards, topography, and the limited number of viewpoints toward the construction sites. Following construction, the pipelines would be entirely below-ground and the above-ground facilities would be screened from most viewpoints. Considering the lack of designated scenic corridors in the area and the project's minimal direct impact to the overall character of the area, the project's impacts on visual resources would not be cumulatively considerable.

Air Quality

The geographic scope of cumulative air quality impacts is the South Coast Air Basin. Concurrent construction of the project with other projects in the air basin would generate emissions of criteria pollutants and toxic air contaminants, including suspended and inhalable particulate matter and equipment exhaust emissions. Other projects that would contribute to cumulative impacts on air quality are shown in Table 4-1. (Please note that Table 4-1 only includes projects in the general vicinity of the East Branch Extension Phase II project and does not purport to list all construction projects within the air basin.) Implementation of Mitigation Measures AQ-1 through AQ-10 would ensure implementation of the SCAQMD requirements to control fugitive dust at construction sites and other measures to limit construction dust and vehicle and equipment emissions. However, as discussed in Section 3.2, the project nevertheless would exceed SCAQMD significance thresholds for criteria air pollutants, resulting in significant and unavoidable air quality impacts during the three-years of construction activities. Because the project construction would exceed significance thresholds established by the SCAQMD for activities and operations within the air basin, its contribution to cumulative air quality impacts would be cumulatively considerable.

The accumulation of GHGs has been implicated as the driving force in global climate change. Climate change is commonly used interchangeably with “global warming” and the “greenhouse effect.” Definitions vary among regulatory authorities and members of the scientific community, but in general climate change can be described as the changes in the earth's climate caused by natural fluctuations and anthropogenic activities that alter the composition of the global atmosphere.

As described in section 3.2, operation of the proposed project is estimated to produce approximately 15,618 net new metric tons of CO₂e emissions annually. This emission level is estimated to account for 0.012 percent of the state's overall annual reduction goal (174 million metric tons per year of CO₂e emissions). This level of emissions would not result in a direct significant and unavoidable contribution of GHG. Furthermore, this project would not conflict with the state goal of GHG emission reduction to 1990 levels by 2020, nor would it conflict with the County of San Bernardino GHG emissions reduction environmental commitments adopted as part of their 2007 General Plan. Nonetheless, the project would be considered cumulatively

considerable since the project's emissions combined with regional, state, and global emissions would contribute to conditions that affect the global climate.

Biological Resources

The geographic scope of potential cumulative impacts related to biological resources encompasses the Santa Ana River wash and Mill Creek flood plain and neighboring open space. As described in Chapter 3, construction of the proposed project would result in the destruction of natural habitats. Mitigation measures are identified to minimize the project's effects, but construction of the project could result in take of special status plant and animal species. Other past, present, and future projects that could have an effect on the Santa Ana River wash habitats include, but are not limited to the Metropolitan Water District Inland Feeder pipeline project, the SBVWMD Central Feeder project, the Seven Oaks Dam, the WSPA, mining activities in the wash, and the Wash Management Plan (Plan B). Plan B is a proposed habitat conservation plan that would preserve open space in the wash to support the natural habitats and sensitive species found in the area. Implementation of Plan B and the WSPA are projects that would mitigate the regional reduction in sensitive habitats resulting from multiple projects. The mitigation identified in Chapter 3 of this document would reduce potentially significant impacts of the proposed project to a less-than-significant level. Therefore, the proposed project would not contribute to a cumulatively considerable biologic impact.

Cultural Resources

The geographic scope of potential cumulative impacts related to cultural resources encompasses the East Branch Extension Phase II project area and immediate vicinity. As described in Chapter 3, construction of the proposed project would include earthmoving activities that could unearth previously unknown archaeological or paleontological resources. Cultural sites identified during construction would be recorded at the San Bernardino Archaeological Information Center. Other development projects planned for the area could also encounter cultural resources. Each project would be responsible for recording new sites appropriately. None of the historic structures near the proposed project would be affected by other planned or proposed projects. Uncovering archaeological and paleontological resources generally adds to the regional understanding of the area's history and would not result in a cumulatively considerable adverse impact to cultural resources.

Geology, Soils, and Seismicity

The geographic scope of potential cumulative impacts related to geology, soils, and seismicity, encompasses the East Branch Extension Phase II project area and immediate vicinity. As described in Chapter 3, construction of the proposed project would include earthmoving activities that could result in soil erosion. Because the project would require a grading plan and Storm Water Pollution Prevention Plan which require erosion control features and construction practices to prevent soil erosion, the project's soil erosion impacts would be less than significant. All of the construction projects listed in Table 4-1 would include some degree of ground-breaking and excavation activities, and therefore would have the potential to contribute to a significant

cumulative impact as a result of soil erosion. Because DWR and its contractors would implement measures and design features to prevent soil erosion, the project's contribution to the potential cumulative impact would not be cumulatively considerable.

Hazards and Hazardous Materials

The geographic scope of impacts associated with hazardous materials generally encompasses the proposed project area, including the construction zone and the area within a one-quarter-mile radius. As described in Chapter 3, the proposed East Branch Extension Phase II could expose workers, the public, and the environment to hazardous materials that may be present in excavated soil or groundwater. Hazardous materials used during construction also could be released in the event of accidental upset. Excavation activities associated with the construction of the projects listed in Table 4-1 could similarly encounter hazardous materials in soil and groundwater, and construction activities associated with these projects could result in the accidental release of hazardous materials. Implementation of mitigation measures identified in Section 3.6, Hazardous Materials would ensure that impacts associated with potential exposure to hazardous materials in the soil would be less than significant. Therefore, the proposed project's contribution to these impacts would not be cumulatively considerable.

Part of the proposed project would be constructed in and around rural, agricultural, and open space areas potentially susceptible to wildland fires. Other projects that could affect agricultural, rural, or open space areas include but are not limited to: the water projects mentioned above, projects located in unincorporated San Bernardino County, and projects on the border of rural and open space areas. Implementation of identified mitigation measures would reduce potential East Branch Extension Phase II impacts associated with the risk of wildland fires to a less-than-significant level. Therefore, the proposed project's contribution to cumulative impacts to fire safety and the risk of wildland fires would not be cumulatively considerable.

Hydrology and Water Quality

The geographic scope of potential cumulative water quality impacts encompasses the Santa Ana River, Mill Creek, and their tributaries and associated drainage areas within the East Branch Extension Phase II project area. As discussed in Chapter 3, construction activities associated with the project could degrade water quality from sedimentation as a result of increased erosion or from the release of fuel or hazardous materials. The other projects listed in Table 4-1 could have similar construction-related impacts on water quality in the project area. Construction activities at other project sites also could increase erosion and subsequent sedimentation, with impacts on water quality as well as storm drain capacity. State law requires DWR to prepare and implement a SWPPP that identifies potential pollutant sources and BMPs to reduce pollutants in storm water discharges. Therefore, the contribution of the proposed project to this cumulative water quality impact would not be cumulatively considerable.

Although construction of the proposed Citrus Reservoir and Citrus Pump Station would increase impervious surface and increase storm water runoff, the project's impact on the local drainage system would not be significant because the reservoir and pump station site would contain all

stormwater runoff on site. The increase in impervious surface area resulting from the project would be minor and would not result in substantial increases in runoff; impacts would be less than significant. The other projects listed in Table 4-1 also could contribute to increased runoff due to increases in impervious surfaces to varying degrees. Because the project would result in only a minor increase in impervious surface area and drainage facilities at the above-ground facilities would be appropriately designed to accommodate storm water runoff, the project's contribution to cumulative effects would not be cumulatively considerable.

Land Use, Planning, and Recreation

The geographic scope of impacts on land uses and recreational facilities is the planning jurisdictions of the cities of Redlands, Highland, San Bernardino, and the portion of unincorporated San Bernardino County that comprises Mentone. Construction of projects in the immediate vicinity of the Redlands airport could disrupt some airport operations. Implementation of Mitigation Measures LU-4, 5, and 6 would reduce the impact of project construction on the Redlands Municipal airport to a less-than-significant level. Implementation of the identified measure would ensure that the project's contribution to cumulative impacts on the airport would not be cumulatively considerable.

Because neither of the Bikeway projects nor the segment of the Santa Ana River trail that would be affected by pipeline construction is completed or open, the project would not have a significant impact on any recreational resources. Although the cumulative impact of the projects in Table 4.1 on recreational facilities in the project region is unknown, the project would not affect any recreational facilities that are currently open. The project's contribution to cumulative impacts on recreational facilities would not be cumulatively considerable.

As discussed in Chapter 3, the construction of Citrus Reservoir would result in the conversion of Unique agricultural land. As development has increased in the Redlands area, the acreage of citrus orchards in the area has decreased. The loss of citrus orchards is seen as a significant and unavoidable impact of the Redlands General Plan.

The City of Redlands General Plan identifies citrus orchards as an important part of the city's heritage that have been declining as a result of urban expansion. According to the General Plan, despite a two-thirds decline in acreage during the previous 30 years, 4,888 acres of citrus remain. The citrus industry is a significant contributor to Redlands' economy and has an annual crop value of \$6 to \$10 million (City of Redlands, 1995). Buildout of the General Plan may result in the conversion of about 4,700 acres of agriculture to urban land uses. Implementation of General Plan policies will encourage preservation of the remaining 622 acres of agricultural land. The Redlands General Plan EIR states that displacement of citrus by urban development would not represent a net loss to the local economy. The General Plan indicates that conversion of some agricultural land to urban uses is expected, though Redlands intends to preserve as much as possible. By encouraging that the agricultural lands be used for planned residential development, viable citrus areas may be preserved without reducing the number of housing units or development to be built on the parcel. In addition, it is expected that conversion of agricultural

land within future growth areas will not occur immediately and that agricultural production will continue in these areas for many years.

Orchard conservation groups have been formed in an effort to conserve citrus orchards in the area. The Redlands Conservancy was founded in 1994 with the purpose of exploring economically attractive ways to preserve open space as an avenue for preserving the historical and cultural heritage of the community. One of the Redlands Conservancy's functions is to preserve local citrus heritage. In August 2004, the Inland Orange Conservancy was formed as a project under the Redlands Conservancy with the objective of educating the community about citrus heritage and promoting citrus preservation.

Because loss of agricultural land throughout the county and region is occurring incrementally through the development of projects of various sizes, numerous projects are contributing to the cumulative effect. The proposed project's direct effects on about 35 acres of agricultural resources are considered less than significant based on analysis using the state of California Department of Conservation's LESA Model on a project level. However, this project's cumulative contribution to agricultural impacts to the region is considered a significant and unavoidable cumulative impact.

Noise and Vibration

The geographic scope of potential cumulative noise and vibration impacts encompasses the proposed construction site, immediate vicinity around the site, and the access routes and haul routes. As discussed in Chapter 3, the project construction could expose persons to noise and vibration levels in excess of established standards. Other construction projects that could contribute to cumulative noise and vibration impacts include those within the range of audible noise from pipeline and facility construction. Other projects planned in the immediate vicinity of the proposed project components include but is not limited to the Redlands Municipal Airport hangar construction project and the Larry Jacinto Living Trust recycling center, and San Bernardino County roadway improvements on Opal Avenue, the Garnet Street Bridge Replacement project, and the Mill Creek Development, in the immediate vicinity of the pipeline alternative alignment. The recycling center project also is in the immediate vicinity of the proposed Citrus Reservoir and Citrus Pump Station, and the Mill Creek project is in the immediate vicinity of the Crafton Hills enlargement project. Even with the implementation of mitigation measures identified in Section 3.9, noise impacts would be significant and unavoidable. This project's individual contribution of significant and unavoidable noise impacts would contribute to the overall noise environment and would result in a cumulatively significant impact.

Public Services and Utilities

As described in Chapter 3, construction of the proposed East Branch Extension Phase II project could result in significant project impacts associated with the planned or accidental disruption of utility services, potential increased demand for police and fire department services, and increased demand on waste disposal facilities. Construction activities associated with many of the projects

listed in Table 4-1 also could result in the disruption of utility service or increase the demand for public services. Implementation of Mitigation Measures PU-1 through PU-3 would ensure that overhead and underground utilities in the project area are appropriately identified and that the fire department is promptly notified in the event of damage to any gas utility. Mitigation Measure PU-6 would require DWR to provide a copy of its Traffic Control Plan to the County sheriff's and fire departments and city police and fire departments for review prior to project implementation. This would reduce the project's potential impacts on local police and fire services to a less-than-significant level. Implementation of Mitigation Measures PU-7 and PU-8 would ensure proper management of excavation spoils and reduce potential impacts on area landfills to a less-than-significant level. Implementation of these measures would ensure that the project's contribution to cumulative impacts on public services and utilities would not be cumulatively considerable.

Traffic

As described in Chapter 3, construction of the proposed project would generate increased vehicle trips (by construction workers and construction vehicles) on area roadways; require temporary road closures on some public roadways; increase potential traffic safety hazards; increase wear and tear on haul routes; and increase demand for parking in the vicinity of construction sites. Other construction projects that could contribute to cumulative traffic impacts include those listed in Table 4-1 that would use the same or adjacent streets and local highways for haul routes and related construction traffic. Implementation of Mitigation Measure TR-1 requires DWR to provide staging areas for excavated material and to minimize use of local roads for hauling excavated material. It also specifies that DWR will obtain all necessary road encroachment permits prior to project construction, and that DWR will require its contractor to prepare a traffic safety plan. Implementation of this measure will reduce the project's impacts related to increased vehicle trips on area roads. Mitigation Measure TR-5 requires DWR to return area roadways used for the project to a structural condition that is equal to that which existed prior to construction activity. Together these measures would reduce the project's construction impacts to a less-than-significant level. However, depending on which specific routes would be used for construction traffic for the East Branch Extension Phase II projects and the roadways that would be used for other major construction projects in the vicinity, the project's contribution to a significant cumulative impact could be considerable. In particular, simultaneous construction of the Garnet Street Bridge replacement project, the Opal Avenue rehabilitation project, and the Redlands Municipal Airport hangar construction project would have the potential to create a significant cumulative traffic impact. Implementation of Mitigation Measure C-1 would ensure that the impact would be less than significant.

Mitigation Measures

C-1: DWR shall contact the City of Redlands and San Bernardino County to determine if construction of the Redlands Municipal Airport, Garnet Street Bridge, or Opal Avenue Rehabilitation projects would occur at the same time and if the same routes had been identified as haul routes for other construction-related traffic. If construction of any of these projects would occur along the same haul routes identified by DWR at the same time,

DWR shall coordinate with the City of Redlands and San Bernardino County to identify alternative haul routes that would minimize the cumulative effect to traffic.

Significance Conclusion

Significant and unavoidable. Implementation of Mitigation Measure C-1, as well as the mitigation measures in Chapter 3, would reduce the cumulative contribution of the proposed project's construction related impacts for all resource areas except air quality, agricultural resources, and noise.

4.4 Summary of Impacts and Mitigation Measures

Table 4-2 presents the impacts and mitigation summary for Cumulative Impacts.

**TABLE 4-2
IMPACTS AND MITIGATION SUMMARY**

Proposed Project Impact	Mitigation Measure	Significance after Mitigation
Cumulative Effects: The proposed project would have a significant and unavoidable cumulative impact on air quality, agriculture, and noise.	C-1	Significant and Unavoidable

CHAPTER 5

Growth Inducement and Secondary Effects of Growth

5.1 CEQA Requirements

The *California Environmental Quality Act (CEQA) Guidelines* (§15126.2(d)) require that an EIR evaluate the growth inducing impacts of a proposed action:

Discuss the way in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

A project can have direct and/or indirect growth inducement potential. Direct growth would result if a project involved construction of new housing. A project can have indirect growth inducement if it would establish substantial new permanent employment opportunities (e.g., commercial, industrial or governmental enterprises) or if it would involve a substantial construction effort with substantial short-term employment opportunities and indirectly stimulate the need for additional housing and services to support the new employment demand. A project would also have an indirect growth inducement effect if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. An example of this indirect effect would be the expansion of a wastewater treatment plant, which might allow for more development in service areas. This type of growth-inducing effect is typically referred to as a “growth-accommodating” impact.

DWR proposes Phase II of the East Branch Extension of the California Aqueduct, which would involve construction of new facilities and enlargement of an existing pump station in western San Bernardino County within the cities of Redlands and Highland and the unincorporated community of Mentone. Implementation of the proposed project would increase water delivery capacity of the system, allowing SGPWA to receive their future maximum Table A water amount of 17,300 afy (8,650 afy greater than the capacity of Phase I), plus additional water amounts that

may be available under Article 21. The project would also provide greater system operating flexibility by increasing water storage capacity in the system with construction of the Citrus Reservoir.

Based on the CEQA definition above, assessing the growth-inducement potential of the proposed project involves answering the question: “Will implementation of the proposed project directly or indirectly support economic expansion, population growth, or residential construction through increasing the East Branch Extension System capacity?” Water supply is one of the chief, though not the only, public services needed to support urban development. A water service capacity deficiency could constrain future development. Adequate water supply, treatment, and conveyance would play a role in supporting growth in the SBVMWD and SGPWA service areas, but it would not be the single impetus to such growth. Factors such as the General Plans and policies of the cities and counties and/or the availability of wastewater disposal capacity, public schools, and transportation services also influence business and residential or population growth in the planning area. Economic factors, in particular, greatly affect development rates and locations.

5.2 Methodology

To determine direct growth inducement potential, the proposed project was evaluated to verify whether an increase in population or employment, or the construction of new housing would occur as a direct result of the project. If either of these scenarios occurred, the proposed project could result in direct growth-inducement within the SBVMWD and SGPWA service areas.

To determine indirect growth inducement potential, the proposed project was reviewed to ascertain whether it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. Population projections were reviewed, specifically projections developed by the Southern California Association of Governments (SCAG, 2004). The proposed project was then reviewed in relation to these population projections and buildout under the approved General Plans, which also involved reviewing SBVMWD and SGPWA water demand projections as indicated in Urban Water Management Plans (UWMPs) approved by water providers within the SBVMWD and SGPWA service areas for consistency with regional growth population projections developed by SCAG.

Local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure and sewer service. This development may have environmental impacts, which were identified in CEQA documents prepared for adoption of local land use plans. A project that would induce “disorderly” growth that is in conflict with local land use plans could indirectly cause additional adverse environmental impacts and impacts to other public services. Thus, it is important to assess the degree to which the growth accommodated by a project would or would not be consistent with applicable land use plans.

Secondary effects of growth were also investigated as required under CEQA (see Section 5.6 of this chapter). To determine the secondary effects of growth, the impacts identified as significant and unavoidable in area General Plan EIR documents were assessed. While growth may be consistent with local planning policies, it may still promote secondary effects to the local environment. Secondary effects of growth include increased demand on other community and public services and infrastructure, increased traffic and noise, degradation of air and water quality, degradation or loss of plant and animal habitats, and conversion of agricultural and open space land to developed uses. Potential secondary impacts of increased emission of greenhouse gases were also considered (See Section 5.6 of this chapter) in recognition that continued increases in greenhouse gases contribute to climate change, and that impacts related to greenhouse gases must be considered under CEQA.

5.3 Growth Trends and Forecasts

5.3.1 Background

The Final EIR for the Water Importation Project concluded the project would allow for the forecasted demand of potable water in the area to be met. The EIR concluded that by meeting the forecasted water demand, the project would facilitate planned growth. The EIR also acknowledged that without the project, local population growth could be constrained and that regional growth would be redistributed to areas with more readily available water.

In June 1996, Addendum No. 1 to the Final EIR was published. The Addendum provided a more detailed analysis of the project's effects on population growth in the region. The Addendum concluded that by providing new water supply to meet the needs of approved planned and forecasted growth, the project would be removing one potential obstacle to growth in the SGPWA service area. Therefore the project must be considered to be a growth inducing factor. This growth would then result in a variety of cumulative impacts.

Two subsequent Addenda to the Water Importation Project were adopted by SGPWA in April of 2007 to evaluate Applications for Water Service made by the City of Banning and the Yucaipa Valley Water District. The two Addenda evaluated the consistency of the applications with the previously adopted Final EIR, finding that the applications were anticipated by the Water Importation Project Final EIR that did not require major revisions to the growth inducing analysis provided in the Final EIR. The two Addenda compiled population and household forecast data from 1989 through 2004, illustrating that the more recent growth projections for the SGPWA service area provided by SCAG. SCAG published regional growth projections in their 2004 Regional Transportation Plan (RTP). The 2004 projections anticipate more modest growth than their 1996 projections. However, SCAG's 2004 population projections for the SGPWA service area fall within the "Most Likely Growth Scenario" described in the 1996 Addendum. The two Addenda prepared in 2007 conclude that the existing and projected demand accommodated by the water service is within the range anticipated in the 1996 Addendum.

5.3.2 SCAG Projections

SCAG analyzes demographic data and makes population projections as part of the published *City Projections 2004* (SCAG, 2004). These data are generally introduced every three-years within the RTP prepared by SCAG assessing transportation infrastructure needs of the region. The SCAG RTP 2007 growth projections had not been published at the publication date of this EIR. The SCAG projections assume that growth potential is not constrained by a lack of public services. As such, the population estimates are not target levels, but rather reasonably foreseeable levels, based on the current trends.

The SCAG State of the Region reports for 2001, 2002 and 2005 were reviewed to determine historical growth trends in the Southern California region. During the 1990s, the region's average annual population increase was about 190,000, until 2001, when it experienced a population surge of 350,000³. The counties of San Bernardino and Riverside have continued to experience the highest rate of growth in Southern California. The two counties added a combined total of approximately 700,000 people between 1990 and 2000, the highest growth rate in Southern California during that time¹. SCAG's 2002 report indicates that the geographical distribution of population growth has changed significantly since 1950. Between 1950 and 1960, Riverside and San Bernardino County represented less than 13 percent of Southern California's growth. During the 1980s and 1990s, the two counties represented approximately 34 percent of the region's growth. In 2005, Riverside County achieved the second highest growth rate of 3.4 percent in California and three of the top ten fastest growing cities in the state were in Riverside County. In the same year, San Bernardino County achieved the eleventh highest growth rate in the state². Another noticeable change has been in the source of growth. Prior to 1980, a significant portion of Southern California's growth was due to increases in net domestic in-migration. However, during the 1990s, natural increase became the largest source of population growth in the region, with the exception of Riverside County where net domestic migration remained the primary source³. In 2005, Riverside and San Bernardino were the only two counties in the region where net domestic migration was the primary source of growth. This has been the result of rising costs of living and higher housing prices in the coastal counties compared to the inland counties.

Population in the SBVMWD and SGPWA service areas is projected to increase substantially by 2030. The service area boundaries for SBVMWD and SGPWA can be seen in Figure 1-2. The projected population growth within each service area from 2005 to the year 2030 is shown in **Table 5-1**. The population projections for SBVMWD are based on SCAG's 2004 RTP projections for the census tracts included in SBVMWD's service area (SCAG, 2004). For the census tracts that are partially included in the service area, population within the service area is estimated based on the percentage of the census tract area included in SBVMWD's service area. The population projections for SGPWA are based on SCAG's 2004 RTP projections for Regional Statistical Area

¹ SCAG, 2001. The State of the Region 2001.

² SCAG, 2005. The State of the Region 2005.

³ SCAG, 2002. The State of the Region 2002.

TABLE 5-1
SCAG POPULATION PROJECTIONS, 2005-2030

Location	2005	2010	2015	2020	2025	2030
<i>San Bernardino Valley Municipal Water District Service Area</i>	641,004	680,100	719,800	751,200	784,500	816,583
<i>San Geronio Pass Water Agency Service Area (RSA 50)</i>	67,607	81,558	108,950	135,759	161,618	186,363

SOURCE: SCAG, 2004; SBVMWD, 2007d

(RSA) 50 (SCAG, 2004). RSA 50 is generally contiguous with the SGPWA service area.⁴ SGPWA has used population projections for RSA 50 in previous analyses of growth impacts in Addenda Nos. 2 and 3 to the Water Importation Project EIR (SGPWA, 2007b, 2007c). Therefore, for consistency the latest population projections for RSA 50 are presented in Table 5-1. Between 2005 and 2025, population in the SBVMWD service area is projected to increase 22 percent from 641,004 to 784,500. Between 2005 and 2030, population in the SGPWA is expected to increase 176 percent from 67,607 to 186,363.

5.3.3 General Plan Projections

Household and population projections in local General Plan EIRs were reviewed to provide a comprehensive assessment of population growth projections. The General Plans provide forecasts for future household supply within each city and county. Some of the housing development is planned to occur in undeveloped areas that are not served by basic infrastructure needs such as water and other utilities. However, many of the General Plan projections from these documents are ten or more years old and considered outdated. In addition, the General Plan documents typically use SCAG as their projection data source. As a result, the SCAG population projections are presented to provide more recent and consistent population projections.

5.4 Water Demand Projections

Water demand projections for the SGPWA and SBVMWD were primarily obtained from UWMPs prepared by each jurisdiction within their service areas. Urban water suppliers of a certain size are required to prepare an UWMP for the purpose of “actively pursu[ing] the efficient use of available supply.”⁵ In preparing the UWMP, the water supplier is required to coordinate with other appropriate agencies, including other water suppliers that share a common source, water management agencies, and relevant public agencies. The Urban Water Management Planning Act requires urban water suppliers, as part of their long-range planning activities, to make every effort to ensure the appropriate level of reliability in their water service sufficient to

⁴ Regional Statistical Area (RSA) 50 includes the following census tracts: 43802, 43805, 43806, 43807, 43808, 43809, 43900, 44101, 44102, 44103, 44104, 44200, 44300, and 44000.

⁵ California Water Code, Section 10610.2 *et seq.*

meet the needs of their various categories of customers during normal, dry, and multiple dry water years. In preparing long-range water supply plans, water suppliers rely on planning assumptions adopted by local agencies with land use authority, such as city and county General Plans, to determine the size and nature of their future customer base.

Water demand projections within the SBVMWD and SGPWA are calculated using a variety of methods by numerous water purveyors. UWMPs have been prepared for the larger water purveyors, but the smaller water suppliers are not required to prepare UWMPs. Each water district in the SBVMWD service area and SGPWA service area has a unique formula for determining future water demand based on the characteristics of its customer base. Demand projections can be calculated from:

- population projections from adopted planning documents, such as general plans or SCAG's periodic RTP (City of Redlands, 2005; Yucaipa Valley Water District, 2005);
- estimates of new households, equivalent dwelling units (EDUs), or water service connections (Beaumont Cherry Valley WD, 2005);
- planned patterns of land use at buildout.

For most agencies, water demand projections are determined using a combination of these methodologies in order to accurately reflect the water needs of different customer categories. The formulas for calculating water demand are based on water use per capita, number of households, EDU, land use plans and classifications, planned projects, or service connections and are uniquely applied by each individual water purveyor. Methodologies for calculating demand vary among water agencies and are influenced also by annual hydrologic conditions.

The SGPWA and SBVMWD are the wholesale water agencies in the vicinity of the proposed project. They provide water that is either treated or untreated (depending upon locality and need) to a number of water retailers. Water demand projections for these service areas are described below.

5.4.1 SGPWA Service Area

The SGPWA service area includes the cities of Banning, Beaumont, Calimesa, the community of Cherry Valley, the Morongo Indian Reservation and portions of the Cabazon area. Water demand projections for the SGPWA service area are identified in **Table 5-2**. The demand projections are derived from the UWMPs for each jurisdiction as summarized in the *Upper Santa Ana River Watershed Integrated Regional Water Management Plan* prepared in 2006 by SBVMWD. A portion of the Yucaipa Valley Water District area is included in the SGPWA service area; therefore, a portion of this District's estimated water demands are included in Table 5-2.

Total water demand in the SGPWA service area through 2030 is estimated at 84,000 afy, an increase of 60,400 afy relative to demand in 2005. The water supply portfolio in the SGPWA service area includes groundwater, imported water, surface water and recycled water. The proposed project (East Branch Extension Phase II) would increase water delivery capacity of the system, allowing SGPWA to receive its maximum Table A amount of 17,300 afy (8,650 afy

TABLE 5-2
WATER DEMAND IN THE SGPWA
SERVICE AREA BY WATER PURVEYOR (ACRE-FEET PER YEAR)

San Gorgonio Pass Area	2005	2010	2015	2020	2025	2030
Beaumont Cherry Valley WD	8,800	22,300	27,900	29,300	30,000	30,500
City of Banning	9,500	12,500	15,500	18,500	21,600	24,600
Cabazon Water District	1,000	4,000	8,000	12,000	16,000	16,000
South Mesa Water Company	2,500	2,700	3,200	3,600	3,700	4,300
Yucaipa Valley Water District	1,800	5,400	6,100	7,100	7,300	8,600
Subtotal	23,600	46,900	60,700	70,500	78,600	84,000

SOURCE: SBVMWD, 2007d

greater than the capacity of Phase I), plus additional water that may be available under Article 21. Article 21 water is SWP water that is available in some years to State Water Contractors during the winter months. Water imported to SGPWA through the East Branch Extension would be used for groundwater recharge or treated and conveyed to customers for potable use.

5.4.2 SBVMWD Service Area

The SBVMWD service area includes the cities and communities of Bloomington, Colton, East Highland, Highland, Grand Terrace, Loma Linda, Mentone, Rialto, Redlands, Yucaipa and San Bernardino. Water demand projections for the jurisdictions in the SBVMWD service area are identified in **Table 5-3**.

The demand projections are derived from each jurisdiction's 2005 UWMP as summarized in the *Upper Santa Ana River Watershed Integrated Regional Water Management Plan* prepared in 2006 by SBVMWD. Total water demand in the SBVMWD service area through 2030 is estimated at 364,100 afy, an increase of 108,200 afy relative to demand in 2005. The water supply portfolio in the SBVMWD service area includes groundwater, imported water, surface water, and recycled water. The proposed project would increase the amount of SWP water the SBVMWD could deliver to the Redlands and Yucaipa Valley areas. Water delivered to SBVMWD through the East Branch Extension would be used for irrigation, groundwater recharge, or recreation, or treated and conveyed to customers for potable use in the Redlands or Yucaipa Valley areas.

5.4.3 Water Demand Summary

Population growth in the SBVMWD and SGPWA service areas is expected to be substantial, as generally described in Table 5-1. Individually, each water agency has taken into consideration the population growth projections and land use plans for its service area as approved by local and regional planning agencies. The water demand projections identified in Tables 5-2 and 5-3 have been calculated by each water purveyor in response to this approved population growth.

**TABLE 5-3
WATER DEMAND IN THE SBVMWD
SERVICE AREA BY JURISDICTION (ACRE-FEET PER YEAR)**

Water Agency	2005	2010	2015	2020	2025	2030
Non-Plaintiffs of the Western Judgment						
City of Colton	11,900	13,500	14,800	16,100	17,300	17,300
East Valley Water District	27,000	30,4000	34,200	35,900	35,900	35,900
Fontana Water Company	31, 300	37, 200	39,600	39,600	39, 600	39, 600
City of Loma Linda	7,600	8,800	9,400	9,900	10,200	10,600
Marygold Mutual WC	0	0	1,500	1,500	1,500	1,500
Muscoy Mutual WC	2,100	2,100	2,100	2,100	2,100	2,100
City of Redlands	45,500	50,600	55,000	59,500	61,500	65,300
City of Rialto	14,300	13,300	13,900	13,900	13,900	13,900
San Bernardino MWD	47,500	54,800	61,900	67,700	73,500	73,500
Terrace Water Co.	900	900	900	900	900	900
West Valley Water District	25,300	30,000	33,700	39,000	45,000	56,400
Yucaipa Valley Water District	13,900	13,200	15,600	17,300	19,400	20,000
Other/Private	28,600	28,300	28,000	27,700	27,400	27,100
Subtotal	255,900	283,100	310,600	331,100	348,200	364,100

SOURCE: SBVMWD, 2007d.

Water demand projections are used to evaluate and determine the need for additional water supplies. Relative to demand in the year 2005, Table 5-2 indicates a need for an additional 60,400 afy in the SGPWA service area by the year 2030 and a need for an additional 108,200 afy in the SBVMWD service area by the year 2030. The proposed project would allow additional water supplies to be delivered to the project area through the SWP to meet part of future demands. The remaining demand would be met by other sources including local groundwater, recycled water, and conservation.

5.4.4 Conservation and Recycled Water Programs

Conservation Measures

Conservation measures are included in future water supply and demand estimates for the region. The SGPWA estimates that approximately 5 percent of future water demands will be achieved through additional conservation measures not already implemented. Region-wide the IRWMP reports an estimated 2.5 percent additional conservation goals for the Santa Ana Watershed region. The California Urban Water Conservation Council (CUWCC) has developed Demand Management Measures (DMMs) to encourage conservation efforts by water purveyors in California. UWMPs are required to provide information regarding implementation of the DMMs. Table 5-4 outlines which DMMs each water purveyor in the project area has implemented.

**TABLE 5-4
IMPLEMENTATION OF DMMS BY WATER AGENCY**

Water Agency	Demand Management Measure Implementation													
	Residential Water Surveys	Residential Plumbing Retrofits	System Water Audits Leak Detection and Repair	Metering	Large Landscape Conservation Program	High Efficiency Washing Machine Rebate Program	Public Information Program	School Education Program	Conservation Program	Wholesale Agency Program	Conservation Pricing	Water Conservation Coordinator	Conservation Pricing	Water Conservation Coordinator
City of Banning	N	Y	Y	Y	Y	N	Y	Y	N	N	Y	Y	Y	N
East Valley Water District	N	N	Y	Y	N	N	Y	Y	Y	N	N	N	Y	N
Fontana Water Company	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y
City of Loma Linda ¹	N	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	N
City of Redlands	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y
San Bernardino MWD	Y	N	Y	Y	N	N	Y	Y	N	N	N	N	Y	N
West Valley Water District	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Beaumont Cherry Valley	N	N	Y	Y	Y	N	Y	Y	Y	N	Y	N	N	N
City of Rialto	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y
Yucaipa Valley Water District	N	N	Y	Y	N	N	Y	N	N	N	Y	Y	Y	N

SOURCE: Upper Santa Ana River Watershed IRWMP, November 2007.

Recycled Water

Recycled water is a critical element of future water supplies. Water agencies in the upper Santa Ana River watershed have implemented and are planning numerous recycled water programs for use in landscape irrigation, agricultural irrigation, and other commercial and industrial purposes. Water agencies such as Yucaipa Valley Water District, the City of Loma Linda, and the City of Banning are considering the installation of dual plumbing in new developments. **Table 5-5** identifies the recycled water programs planned and already in operation in the region.

**TABLE 5-5
RECYCLED WATER PROGRAMS IN THE SGPWA AND SBVMWD SERVICES AREAS**

Water Agency	Recycling Plant	Recycled Water Production Capacity	Description
City of Banning	City of Banning Wastewater Treatment Plant	3.6 MGD	Planned use of recycled water for irrigation.
Beaumont Cherry Valley WD	City of Beaumont Wastewater Treatment Plant	2 MGD	Current expansion will upgrade production to 4 mgd.
Fontana Water Company	IEUA Regional Treatment Plant 4	7 MGD	FWC needs additional infrastructure to deliver recycled water in its service area.
City of Redlands Municipal Utilities Department	City of Redlands Wastewater Treatment Plant	6 MGD	Recycled water used for basin recharge and industrial purposes.
City of Rialto and West Valley WD	City of Rialto Water Treatment Plant	12.0 MGD	Recycled water used for landscape irrigation on the I-10. City plans to expand use of recycled water.
San Bernardino MWD	San Bernardino Water Reclamation Plant	0.75 MGD	Construction of a tertiary plant at the existing San Bernardino Water Reclamation Plant to recycled water for landscape irrigation.
Yucaipa Valley Water District	Henry N. Wochholz WWTP	6.7 MGD	New plant at Oak Valley will increase total recycled water availability to 12,000 af/yr.
San Bernardino MWD, City of Colton, City of Loma Linda, County of San Bernardino, and East Valley Water District	Rapid Infiltration and Extraction	40 MGD	All the water from the RIX is currently released into the Santa Ana River. The City of San Bernardino is exploring selling parts of its portion of the recycled water.

SOURCE: Upper Santa Ana River Watershed IRWMP, November 2007.

5.5 Growth Inducement Potential Conclusions

This section discusses the following CEQA Checklist question:

Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Significance Threshold

The project would have a significant impact if it induced population growth in an area, either directly or indirectly, that resulted in significant secondary effects.

Impact Analysis

The proposed project would enable the delivery of additional SWP water to the SBVMWD and SGPWA service areas within the Yucaipa Valley. Because the project is limited to the provision of water supply infrastructure, as opposed to housing or commercial development that would directly affect the number of residents or employees within the service areas, the proposed project would not directly contribute to the creation of additional housing or jobs within San Bernardino and Riverside counties. Therefore, it would be considered growth accommodating rather than directly growth inducing.

The additional water would help meet some of the water demands in the SBVMWD and SGPWA service areas. The General Plan EIRs for cities within the Yucaipa Valley and SGPWA service area indicate that growth is planned to occur in undeveloped areas that are not currently served by potable water. Some growth in the area has occurred in anticipation of the delivery of the region's full SWP Table A amount. The proposed project would provide the necessary infrastructure to provide potable water to serve demand that already exists in these areas and to serve additional growth that is planned in local General Plans. Therefore, development of the proposed project would eliminate a potential obstacle to growth, allowing development to occur at a more rapid pace than could occur without the proposed project. The project would indirectly accommodate growth, and would also contribute to the secondary effects of growth in the region, which is more fully discussed below.

5.6 Secondary Effects of Growth

Implementation of the proposed project would allow the SBVMWD and SGPWA to provide the level of conveyance capacity needed to accommodate a portion of the growth that has already occurred and is planned for their service areas. The proposed project would not result in a direct increase in population or employment, but would indirectly support growth that is consistent with the local General Plans and regional growth management projections within the SBVMWD and SGPWA service areas. While growth may be consistent with local planning policies, it may still cause secondary effects to the local environment. Secondary effects of growth include increased demand on other community and public services and infrastructure, increased traffic and noise, degradation of air and water quality, degradation or loss of plant and animal habitats, and conversion of agricultural and open space land to developed uses. Therefore, some potentially adverse secondary effects could result from development of planned land uses in the project area.

To determine the secondary effects of growth already identified by local jurisdictions in their General Plan EIRs, the impacts identified as significant and unavoidable in the following documents were reviewed:

- Final EIR and Appendices for the County of San Bernardino 2006 General Plan Program (San Bernardino County, 2006)
- Final EIR for the City of Colton General Plan Update (City of Colton, 1987)
- City of Highland General Plan and Development Code Update Draft EIR (City of Highland, 2005)

- City of Loma Linda General Plan Final Program EIR (City of Loma Linda, 2004)
- City of Redlands Master Environmental Assessment and Final EIR for 1995 General Plan (City of Redlands, 1995)
- City of Rialto General Plan Update Final MEIR (City of Rialto, 1992)
- City of San Bernardino General Plan Update and Associated Specific Plans EIR (City of San Bernardino, 2005)
- Final Program EIR for the Yucaipa General Plan (City of Yucaipa, 1992)
- General Plan Final Program EIR (Riverside County, 2003)
- City of Banning Draft General Plan EIR (City of Banning, 2005)
- Revised Draft EIR for the Beaumont 2006 General Plan Update (City of Beaumont, 2006)

DWR does not have the authority to control land use and growth within the SBVMWD and SGPWA service areas, or to mitigate for the secondary effects of those land use decisions. The cities and counties within the service area have primary land use jurisdiction and responsibility to regulate growth through the land use planning and development approval process. Other agencies which have decision-making authority to implement mitigation measures related to secondary impacts of growth in the project area are shown in **Table 5-6**.

The secondary effects of growth identified in the above-mentioned General Plan EIRs, as well as the policies and measures established to mitigate these effects, are described below and summarized in **Table 5-7**. Effects that have been identified as significant and unavoidable are impacts to land use, agricultural resources, transportation and traffic, air quality, noise, public services, visual and aesthetic resources, geology and soils, and biological resources. The above-mentioned General Plan EIRs include environmental assessments of local land use plans and specific development plans that have been adopted and approved. The local lead agencies have adopted statements of overriding consideration for these significant unavoidable effects. The proposed project would not increase the nature, number or severity of significant effects associated with planned development.

Land Use

Impacts to land use are associated primarily with the conversion of undeveloped, agricultural, or open space lands to urban uses. These impacts are considered to be a significant and unavoidable impact of growth by the City of Redlands.

Population, Employment, and Housing

The increase in population and employment in the region is considered to be a significant impact to the City of Yucaipa. Mitigation measures include implementing a growth management plan, providing a large percentage of low and moderate income housing, and maintaining separation between residential and non-residential land uses.

TABLE 5-6
AGENCIES HAVING AUTHORITY TO IMPLEMENT MAJOR
MITIGATION MEASURES FOR GROWTH-RELATED IMPACTS

Agency	Authority
San Bernardino and Riverside Counties	Responsible for planning, land use, and environmental protection of unincorporated areas. Of particular importance is development of presently undeveloped lands, provision of regional solid waste management facilities, and regional transportation, air quality and flood control improvement programs.
Cities of Bloomington, Colton, Highland, Grand Terrace, Loma Linda, Rialto, Redlands, Yucaipa, San Bernardino, Banning, Beaumont, and Calimesa	Responsible for adoption of the <i>General Plan</i> and various planning elements and local land use regulations. Responsible for managing some wastewater treatment facilities. Adopts and implement local ordinances for control of noise and other environmental concerns. Participates in regional air quality maintenance planning through adoption of local programs to control emissions via transportation improvements. Responsible for enforcing adopted energy efficiency standards in new construction.
Local Agency Formation Commission	Empowered to approve or disapprove all proposals to incorporate cities to form special districts or to annex territories to cities or special districts. Also empowered to guide growth of governmental service responsibilities.
Regional Water Quality Control Board, Santa Ana Region	Shares responsibility with SWRCB to coordinate and control water quality. Formulates and adopts water quality control plans. Implements portions of the Clean Water Act when EPA and SWRCB delegate authority, as is the case with issuance of NPDES permits for waste discharge, reclamation, and storm water drainage.
State Department of Health	Responsible for the purity and potability of domestic water supplies for the state. Assists SWRCB and RWQCBs in setting quality standards.
California Air Resources Board	Responsible for adopting and enforcing standards, rules, and regulations for the control of air pollution from mobile sources throughout the state.
South Coast Air Quality Management District	Adopts and enforces local regulations governing stationary sources of air pollutants. Issues Authority to Construct Permits and Permits to Operate. Provides compliance inspections of facilities and monitors regional air quality. Developed the Clean Air Plan in compliance with the Clean Air Act.
U.S. Fish and Wildlife Service	Requires consultation under Section 7 or Section 10 of the Endangered Species Act for projects which could potentially impact endangered or threatened species. Prepares biological opinions on the status of species in specific areas and potential effects of proposed projects. Approves mitigation measures to reduce impacts and establishes Habitat Conservation Plans.
U.S. Army Corps of Engineers	Issues permits to place fill in waterways pursuant to Section 404 of the Clean Water Act.
California Department of Fish and Game	Issues Stream Bed Alteration Agreements for projects potentially impacting waterways.

SOURCE: ESA, 2007

TABLE 5-7
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF GROWTH IDENTIFIED BY GENERAL PLAN ENVIRONMENTAL IMPACT REPORTS
BY JURISDICTIONS WITHIN SBVMWD SERVICE AREA OR SGPWA SERVICE AREA

IMPACT	JURISDICTIONS WITHIN SAN BERNARDINO VALLEY MUNICIPAL WATER AGENCY SERVICE AREA								JURISDICTIONS WITHIN SAN GORGONIO PASS WATER AGENCY SERVICE AREA			
	San Bernardino County General Plan EIR ¹	City of Colton General Plan EIR ²	City of Highland General Plan EIR ³	City of Loma Linda General Plan EIR ⁴	City of Redlands General Plan EIR ⁵	City of Rialto General Plan EIR ⁶	City of San Bernardino General Plan EIR ⁷	City of Yucaipa General Plan EIR ⁸	Riverside County General Plan EIR ⁹	City of Banning General Plan EIR ¹⁰	City of Beaumont General Plan EIR ¹¹	City of Calimesa General Plan EIR ¹²
Land Use												
<u>Impacts</u>												
• Conversion of undeveloped, agricultural or open space lands to urban uses.		•			•	•			•			
• Conversion of land.								•				
<u>Mitigation Measures</u>												
• Amend plan for city.								•				
• Design measures to preserve and enhance undeveloped and open space lands.		•										
Population, Employment & Housing												
<u>Impact</u>												
• Result in an increase in population and employment.		•						•				
<u>Mitigation Measure</u>												
• Implement a growth management plan.								•				
• Provide a large percentage of low and moderate income housing.								•				
• Maintain separation between residential and non-residential land uses.		•										
Agricultural Resources												
<u>Impacts</u>												
• Convert farmland/prime agricultural soils to urban uses.			•		•							

TABLE 5-7 (CONTINUED)
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF GROWTH IDENTIFIED BY GENERAL PLAN ENVIRONMENTAL IMPACT REPORTS
BY JURISDICTIONS WITHIN SBVMWD SERVICE AREA OR SGPWA SERVICE AREA

IMPACT	JURISDICTIONS WITHIN SAN BERNARDINO VALLEY MUNICIPAL WATER AGENCY SERVICE AREA								JURISDICTIONS WITHIN SAN GORGONIO PASS WATER AGENCY SERVICE AREA			
	San Bernardino County General Plan EIR ¹	City of Colton General Plan EIR ²	City of Highland General Plan EIR ³	City of Loma Linda General Plan EIR ⁴	City of Redlands General Plan EIR ⁵	City of Rialto General Plan EIR ⁶	City of San Bernardino General Plan EIR ⁷	City of Yucaipa General Plan EIR ⁸	Riverside County General Plan EIR ⁹	City of Banning General Plan EIR ¹⁰	City of Beaumont General Plan EIR ¹¹	City of Calimesa General Plan EIR ¹²
<ul style="list-style-type: none"> Reduce agricultural activity and its potential within the city. 	●							●				
<u>Mitigation Measures</u>												
<ul style="list-style-type: none"> Require preparation of a site-specific agricultural resource impact evaluation. 			●									
<ul style="list-style-type: none"> Implementation of policies & programs within the Open Space and Conversation Element. 								●				
<ul style="list-style-type: none"> Protect prime agricultural land from adverse effects of urban encroachment. 	●											
Traffic and Transportation												
<u>Impacts</u>												
<ul style="list-style-type: none"> Increased area-wide traffic volumes with the potential to degrade roadway and freeway performance below applicable performance standards. 	●			●	●		●		●			
<ul style="list-style-type: none"> Impacts to local roadways and intersections. 							●					
<ul style="list-style-type: none"> Increased safety hazards due to improper roadway design or inadequate emergency access. 											●	
<ul style="list-style-type: none"> Construction activities could increase truck traffic. 										●		
<u>Mitigation Measures</u>												
<ul style="list-style-type: none"> Require transit improvements. 	●											
<ul style="list-style-type: none"> Road improvements or additions. 				●					●	●	●	
Air Quality												
<u>Impacts</u>												
<ul style="list-style-type: none"> Pollutant emissions from sources associated with new urban development would exceed SCAQMD's threshold criteria for pollutants. 			●				●			●		

TABLE 5-7 (CONTINUED)
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF GROWTH IDENTIFIED BY GENERAL PLAN ENVIRONMENTAL IMPACT REPORTS
BY JURISDICTIONS WITHIN SBVMWD SERVICE AREA OR SGPWA SERVICE AREA

IMPACT	JURISDICTIONS WITHIN SAN BERNARDINO VALLEY MUNICIPAL WATER AGENCY SERVICE AREA								JURISDICTIONS WITHIN SAN GORGONIO PASS WATER AGENCY SERVICE AREA			
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• Changes in regional vehicular traffic trips.	•								•			
• Exceed cumulative emissions thresholds.											•	
• New emissions generated by the project would increase air pollution and cause a deterioration in regional air quality.	•			•	•	•		•				
• Considerable net increase in criteria pollutants for which the project region is in a state of non-attainment.							•					
• General Plan is inconsistent with Air Quality Management Plan.			•									
<u>Mitigation Measures</u>												
• Specific plan incorporates features that reduce impacts.			•	•	•		•				•	
• Implement Transportation Demand Measures (carpooling, transit, etc.).	•											
• Exercise interagency cooperation to integrate air quality planning efforts with transportation, transit, etc.	•				•							
• Encourage mixed-use development.	•											
• Prepare and implement a dust control plan.	•											
• Use energy more efficiently.										•		
• Adhere to SCAQMD requirements and implement the goals, policies, and actions of the Air Quality Element.					•			•			•	
• Implement discretionary review that will require separate environmental review and project-specific mitigation measures.											•	

TABLE 5-7 (CONTINUED)
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF GROWTH IDENTIFIED BY GENERAL PLAN ENVIRONMENTAL IMPACT REPORTS
BY JURISDICTIONS WITHIN SBVMWD SERVICE AREA OR SGPWA SERVICE AREA

IMPACT	JURISDICTIONS WITHIN SAN BERNARDINO VALLEY MUNICIPAL WATER AGENCY SERVICE AREA								JURISDICTIONS WITHIN SAN GORGONIO PASS WATER AGENCY SERVICE AREA			
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Noise												
<u>Impacts</u>												
• Significant increase in noise for some existing residents from increased traffic.		•										
• Cumulative noise from construction activities.			•							•		
• Cumulative noise from construction activities.				•	•		•					
• Noise from an increased in the use of various modes of transportation.					•					•		
• Significant increase in noise for some existing residents from ground-borne vibration.			•				•				•	
• Residents exposed to an increase in airport-related noise.			•		•		•					
<u>Mitigation Measures</u>												
• Limit construction to daytime hours.				•			•					
• Noise control plan.		•	•	•	•		•			•		
• Provide setbacks, sound attenuation barriers, & appropriate building designs.					•							
• Amend Safety Element to include noise impact.											•	
• Require noise studies.			•				•					
• Implement less vibration intensive equipment or construction techniques.			•				•					

TABLE 5-7 (CONTINUED)
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF GROWTH IDENTIFIED BY GENERAL PLAN ENVIRONMENTAL IMPACT REPORTS
BY JURISDICTIONS WITHIN SBVMWD SERVICE AREA OR SGPWA SERVICE AREA

IMPACT	JURISDICTIONS WITHIN SAN BERNARDINO VALLEY MUNICIPAL WATER AGENCY SERVICE AREA								JURISDICTIONS WITHIN SAN GORGONIO PASS WATER AGENCY SERVICE AREA			
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Public Services												
<i>Law Enforcement and Fire Protection</i>												
<u>Impact</u>												
• Development would require additional law enforcement officers, fire protection, and emergency services.		•										
<u>Mitigation Measures</u>												
• Increase staff, equipment, and facilities.		•										
<i>Water</i>												
<u>Impacts</u>												
• Water demand from cumulative urban development in the state could exceed the local aquifer and/or state's limited water resources.									•			
• Increased demand for water supply & water service extensions.								•		•		
• Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the groundwater table level.											•	
<u>Mitigation Measures</u>												
• Promote water conservation & recycling.										•		
• Adhere to City Ordinances regarding use of water conservation ordinance.								•				
• Consider adoption of water conservation ordinance.								•				
• Update UWMP.											•	
• Ensure water supply is available prior to development through a water supply assessment.									•			

TABLE 5-7 (CONTINUED)
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF GROWTH IDENTIFIED BY GENERAL PLAN ENVIRONMENTAL IMPACT REPORTS
BY JURISDICTIONS WITHIN SBVMWD SERVICE AREA OR SGPWA SERVICE AREA

IMPACT	JURISDICTIONS WITHIN SAN BERNARDINO VALLEY MUNICIPAL WATER AGENCY SERVICE AREA								JURISDICTIONS WITHIN SAN GORGONIO PASS WATER AGENCY SERVICE AREA			
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<i>Solid & Hazardous Waste Management</i>												
<u>Impacts</u>												
• Release of hazardous materials into the environment or development on a hazardous materials site.											•	
• Development in high fire hazard areas could result in periodic wildland fires.	•											
• Increased use of hazardous materials could increase risk to public health and safety.					•							
<u>Mitigation Measures</u>												
• Remove hazardous waste from site according to regulation.											•	
• Ensure that development does not occur on a hazardous materials site.											•	
• Review proposed development projects within high fire hazard areas.	•											
Energy Resources												
<u>Impacts</u>												
• Residential, commercial and industrial growth under the plan would significantly increase energy consumption.					•							
<u>Mitigation Measures</u>												
• Expansion of utility companies to meet demand.					•							
Visual and Aesthetic Resources												
<u>Impacts</u>												
• Conversion of open space areas to urban land use.									•			

TABLE 5-7 (CONTINUED)
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF GROWTH IDENTIFIED BY GENERAL PLAN ENVIRONMENTAL IMPACT REPORTS
BY JURISDICTIONS WITHIN SBVMWD SERVICE AREA OR SGPWA SERVICE AREA

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<ul style="list-style-type: none"> Adverse effects on scenic vistas or substantial damage to scenic resources. 	●				●						●	
<ul style="list-style-type: none"> An increase in light and glare could impact dark sky areas. 	●											
<u>Mitigation Measures</u>												
<ul style="list-style-type: none"> Specific Plan incorporates features that reduce impacts. 	●											
<ul style="list-style-type: none"> Retain predominant natural features. 											●	
Geology, Soils and Seismicity												
<u>Mineral and Aggregate Resources</u>												
<u>Impacts</u>												
<ul style="list-style-type: none"> Project implementation may result in the loss of availability of a known mineral resource. 			●									
<ul style="list-style-type: none"> The risk of property damage and personal injury as a result of seismic activity could still exist. 						●						
<u>Mitigation Measures</u>												
<ul style="list-style-type: none"> Conduct a mineral resource evaluation. 			●									
<ul style="list-style-type: none"> Prepare a report analyzing the project's value in relation to the mineral values found onsite. 			●									
Hydrology and Water Quality												
<u>Impacts</u>												
<ul style="list-style-type: none"> Cumulative increase in flood hazard. 		●										
<ul style="list-style-type: none"> Increase of urban runoff pollutants. 										●		

TABLE 5-7 (CONTINUED)
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF GROWTH IDENTIFIED BY GENERAL PLAN ENVIRONMENTAL IMPACT REPORTS
BY JURISDICTIONS WITHIN SBVMWD SERVICE AREA OR SGPWA SERVICE AREA

IMPACT	JURISDICTIONS WITHIN SAN BERNARDINO VALLEY MUNICIPAL WATER AGENCY SERVICE AREA								JURISDICTIONS WITHIN SAN GORGONIO PASS WATER AGENCY SERVICE AREA			
	San Bernardino County General Plan EIR ¹	City of Colton General Plan EIR ²	City of Highland General Plan EIR ³	City of Loma Linda General Plan EIR ⁴	City of Redlands General Plan EIR ⁵	City of Rialto General Plan EIR ⁶	City of San Bernardino General Plan EIR ⁷	City of Yucaipa General Plan EIR ⁸	Riverside County General Plan EIR ⁹	City of Banning General Plan EIR ¹⁰	City of Beaumont General Plan EIR ¹¹	City of Calimesa General Plan EIR ¹²
<u>Mitigation Measures - Flood Control/Water Quality</u>												
• Develop a Master Drainage/Flood Control Plan.		•								•		
Biological Resources												
<u>Impacts</u>												
• Cumulative loss of special-status species habitat.	•				•			•	•			
• Habitat fragmentation resulting in isolation of sensitive habitat patches that restrict wildlife movement.									•			
• Adverse effect on wildlife habitat from the introduction of exotic plant species and pets.					•							
• Cumulative loss of mature vegetation and trees.	•											
• Loss/fragmentation of wildlife habitat.	•			•	•	•		•	•	•		
• Loss of habitat that inhibits or compromises recovery efforts that could otherwise lead or contribute to the delisting of the species.									•			
<u>Mitigation Measures</u>												
• Provide on-site replacement of habitat.				•								
• A biological survey and report shall be prepared by a qualified biologist with any development proposed within a biologically sensitive area.	•			•	•			•	•	•		
• Construct treatment wetlands outside of natural wetlands.									•			
• Provide buffers between structures and naturally occurring habitat.	•				•							
• Retain movement corridors for wildlife.	•											

TABLE 5-7 (CONTINUED)
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF GROWTH IDENTIFIED BY GENERAL PLAN ENVIRONMENTAL IMPACT REPORTS
BY JURISDICTIONS WITHIN SBVMWD SERVICE AREA OR SGPWA SERVICE AREA

IMPACT	JURISDICTIONS WITHIN SAN BERNARDINO VALLEY MUNICIPAL WATER AGENCY SERVICE AREA								JURISDICTIONS WITHIN SAN GORGONIO PASS WATER AGENCY SERVICE AREA			
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• Require avoidance of habitat or minimization of impacts.	•											
• Landscape with native species.										•		
Cultural Resources												
<u>Impacts</u>												
• Disturb or destroy prehistoric and cultural resources.		•		•			•			•		
<u>Mitigation Measures</u>												
• Conduct a cultural resources survey before development.	•	•		•			•					
• Avoid disturbing possible cultural resource areas when possible.	•			•								

1 URS, 2007b. *Final EIR and Appendices for the County of San Bernardino 2006 General Plan Program*, SCH# 2005101038, February 2007.

2 City of Colton, 1987. *Final EIR for the City of Colton General Plan Update*, SCH# 86051206, May 1987.

3 City of Highland, 2005. *City of Highland General Plan and Development Code Update Draft EIR*, SCH# 2005021046, September 2005.

4 City of Loma Linda, 2004. *City of Loma Linda General Plan Final Program EIR*, SCH# 2003101159, June 2004.

5 City of Redlands, 1995. *City of Redlands Master Environmental Assessment and Final EIR for 1995 General Plan*, SCH# 91022067, October 2005.

6 City of Rialto, *General Plan Update Master Environmental Impact Report*, SCH# 91022040, June 1992.

7 City of San Bernardino, 2005. *San Bernardino General Plan Update and Associated Specific Plans EIR*, SCH# 2004111132, September 2005.

8 City of Yucaipa, 1992. *Final Program EIR for the Yucaipa General Plan*, SCH# 92012079, August 1992.

9 Riverside County, 2003. *General Plan Final Program EIR*, SCH# 2002051143, 2003.

10 City of Banning, 2005. *City of Banning Draft General Plan EIR*, SCH# 2005011039, May 2005.

11 City of Beaumont, 2006. *Revised Draft EIR for the Beaumont 2006 General Plan Update*, SCH# 2004061001, December 2006.

Agricultural Resources

Impacts to agricultural resources are associated with the conversion of farmland and prime agricultural soils to urban uses. These impacts are considered to be significant or significant and unavoidable. Mitigation measures include requiring preparation of a site-specific agricultural resource impact evaluation, protecting agricultural land from the adverse effects of urban development, and implementing policies and programs within the Open Space and Conservation Element.

Traffic and Transportation

Impact to traffic and transportation include the degradation of roadways and additional traffic volume causing freeway performance to operate below performance standards. This impact is considered to be significant and unavoidable by most of the local jurisdictions. Mitigation measures to reduce impacts include requiring public transit, road improvements, and additional roadways.

Air Quality

Significant impacts to air quality are expected to be caused by increases in emission levels associated with new urban development. Unavoidable impacts include increased emissions from greater vehicular traffic and a higher risk of exceeding cumulative emissions thresholds. Most of the General Plan EIRs included a mitigation measure that would require specific plans to incorporate features that reduce impacts to air quality. The General Plans also included a measure that would require adherence to SCAQMD requirements and implementation of the goals and policies of the Air Quality Element.

Greenhouse Gas Emissions

A secondary impact of growth that is not covered in many of the General Plan documents or their associated EIRs is the increased emission of greenhouse gases. It is now largely accepted that continued increases in greenhouse gases will contribute to climate change, although there remains uncertainty concerning the type, magnitude, and timing of these changes. One of the most alarming trends is an increase in average temperatures, or global warming. There is evidence that this trend towards higher temperatures may be accelerating and the related effects of climate change also increasing. Since global warming is attributable at least in part to human activities, it can be concluded that growth on a global scale results in a significant impact to the earth's climate. However, on a local level it remains unclear whether local growth contributes significantly to climate change. Thresholds of significance for growth and greenhouse gas emissions have not yet been developed.

On June 1, 2005 the Governor of California signed Executive Order S-3-05. The Order recognizes California's vulnerability to climate change, noting that increasing temperatures could potentially reduce snowpack in the Sierra Nevada. The Sierra Nevada snowpack is a primary source of water supply in the State, including SWP water. To address these potential impacts, the Order mandates greenhouse gas emission reduction targets. AB 32 codifies the state's goal by

requiring that the state's global warming emissions be reduced to 1990 levels by 2020. This reduction would be accomplished through an enforceable statewide cap on global warming emissions that would be phased in starting in 2012 (Chapter 3.02 Air Quality).

On March 13, 2007 San Bernardino County adopted an update to its General Plan and also approved amendments to its Development Code, known collectively as the General Plan Approvals. These amendments provide a blueprint for the development of land in Riverside County that was intended to be consistent with the protection of the natural resources, economy, environment, and quality of life in the area out to the year 2030. An environmental impact report for the General Plan Approvals was also approved on the same day.

After reviewing the approved documents, the Attorney General filed a petition with the San Bernardino Superior Court on April 12, 2007. The Attorney General alleged "that the General Plan EIR did not comply with the requirements of CEQA in its analysis of greenhouse gas emissions, climate change, and diesel engine exhaust emissions⁶." In the ensuing settlement, San Bernardino County agreed to prepare an amendment to its General Plan adding a policy concerning its goal of reducing greenhouse gas emissions and the adoption of a Greenhouse Gas Emissions Plan. The Plan is required to include inventories of past and future greenhouse gases and a target for reducing the emissions generated by the County's discretionary land use decisions and its internal government operations. The settlement used AB 32 as the minimum level of compliance necessary to satisfy the terms of the agreement.

Noise

Significant and unavoidable impacts to noise are expected to result from increased traffic and construction activities. Significant impacts include exposure to airport-related noise, ground-borne vibrations, and various modes of transportation. The most common mitigation measure provided in the General Plans is the implementation of a noise control plan. Other mitigation measures include limiting construction to day light hours, implementing less vibration intensive equipment, and requiring noise studies.

Utilities and Public Services

The significant impacts to public services include an increased need for law enforcement, fire protection, and emergency services. These impacts can be mitigated by increasing available staff and facilities. Increased demand on water sources and on wastewater treatment are mitigated through the development of additional water supplies and the construction of sufficient treatment capacity.

⁶ San Bernardino Settlement Agreement, California Department of Justice. Court Case No. CIVSS 700329.

Energy Resources

The City of Redlands General Plan contains the only significant impact to energy resources, an increase in energy consumption as a result of residential, commercial, and industrial growth. The corresponding mitigation measure is to expand the utility companies to meet the demand.

Visual and Aesthetic Resources

Significant and unavoidable visual impacts to visual resources result from the conversion of open space areas to urban land uses. Significant impacts include an increase in light and glare and adverse effects on scenic resources. Mitigation measures to reduce impacts include retaining natural features and including a policy in the Specific Plan that conserves visual resources.

Geology, Soils, and Seismicity

Significant and unavoidable impacts to geology, soils, and seismicity include the loss of availability of a known mineral resource and the risk of property damage as a result of seismic activity. Mitigation measures include conducting a mineral resource evaluation and preparing a report analyzing the projects value in relation to the mineral values found onsite.

Hydrology and Water Quality

Significant impacts to hydrology and water quality include a cumulative increase in flood hazard and an increase in urban runoff pollutants. The only included mitigation measure is to develop a Master Drainage/Flood Control Plan.

Biological Resources

Significant and unavoidable impacts to biological resources include a cumulative loss of special-status species habitat, habitat loss or fragmentation, adverse effect on wildlife from the introduction of exotic plant species and pets, the cumulative loss of mature vegetation and trees, and loss of habitat that inhibits sensitive species recovery efforts. Mitigation measures include providing habitat replacement, preparing biological surveys of proposed development areas, providing buffers between structures and natural habitat, and avoiding natural habitats.

Cultural Resources

Growth and development may disturb or destroy prehistoric and cultural resources. Mitigation measures include conducting a cultural resource survey before development and avoiding cultural resources areas when possible.

Mitigation Measures

None available.

Significance Conclusion

Significant and unavoidable. The project would not directly contribute to the creation of additional housing or jobs within San Bernardino and Riverside counties as it is limited to the provision of water supply infrastructure. However, the project would indirectly accommodate growth as it would remove an obstacle to growth resulting in significant secondary effects of growth.

5.7 Summary of Impacts and Mitigation Measures

Table 5-8 presents the impacts and mitigation summary for Growth Inducement and Secondary Effects of Growth.

**TABLE 5-8
IMPACTS AND MITIGATION SUMMARY**

Proposed Project Impact	Mitigation Measure	Significance after Mitigation
Growth Inducing Impacts: The proposed project would deliver potable water supply that would indirectly accommodate growth, and contribute to the secondary effects of growth in the region.	None available	Significant and Unavoidable

CHAPTER 6

Alternatives Analysis

6.1 Introduction

6.1.1 CEQA Requirements

According to the *CEQA Guidelines*, an EIR must describe a reasonable range of alternatives to a proposed project that could feasibly attain most of the basic project objectives, and would avoid or substantially lessen any of the proposed project's significant environmental effects. This alternatives analysis summarizes the alternatives screening process conducted to identify feasible alternatives that meet project objectives. This chapter addresses the No project alternative as well as alternative facility sites for the proposed project. As required by CEQA, this analysis first considers which alternatives can meet most of the basic project objectives, and then to what extent those alternatives remaining can avoid or reduce the environmental impacts associated with the proposed project. Information to select an "environmentally superior alternative", which may be the proposed project, is also provided in this chapter.

Section 15126.6(f) of the *CEQA Guidelines* provides direction on the required alternatives analysis:

"The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making."

An EIR need not consider every conceivable alternative to a project. Rather, the alternatives must be limited to ones that meet the project objectives, are feasible, and would avoid or substantially lessen at least one of the significant environmental effects of the project. "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors. Section 15126.6(b) of the *CEQA Guidelines* states that an EIR:

"... must identify ways to mitigate or avoid the significant effects that a project may have on the environment, the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant

effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or could be more costly.”

Section 15126.6 (d) of the *CEQA Guidelines* provides further guidance on the extent of alternatives analysis required:

“The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.”

The EIR must briefly describe the rationale for selection and rejection of alternatives and the information the lead agency relied on when making the selection. It also should identify any alternatives considered, but rejected as infeasible by the lead agency during the scoping process and briefly explain the reasons for the exclusion. Alternatives may be eliminated from detailed consideration in the EIR if they fail to meet most of the project objectives, are infeasible, or do not avoid any significant environmental effects.

Section 15126.6(e)(1) of the *CEQA Guidelines* also requires that the No Project Alternative be addressed in this analysis. The purpose of evaluating the No Project Alternative is to allow decision-makers to compare the potential consequences of the proposed project with the consequences that would occur without implementation of the proposed project.

Finally, an EIR must identify the environmentally superior alternative. The No Project Alternative may be the environmentally superior to the proposed project based on the minimization or avoidance of physical environmental impacts. However, the No Project Alternative must also achieve the project objectives in order to be selected as the environmentally superior alternative. *CEQA Guidelines* (Section 15126.6(c)) require that if the environmentally superior alternative is the No Project Alternative, the EIR shall identify an environmentally superior alternative among other alternatives.

Listed below are the project alternatives which are examined in this EIR. The purpose of developing conceptual alternatives is to present options that could potentially avoid impacts identified for the proposed project.

1. **No Project Alternative** – No construction of facilities identified under the proposed project. Operation of existing State Water Project water importation facilities including East Branch Extension Phase I pipelines, pump stations and related facilities would continue.
2. **Eastern Pipeline Alternative Alignments**– This alternative examines six pipeline alternative alignments east of the proposed project.
3. **Reservoir Location Alternative** – This alternative would locate a reservoir east of the existing orchard, within SBVWCD’s groundwater recharge area.

6.1.2 Review of Proposed Project Objectives

The SGPWA is a State Water Contractor with a maximum SWP Table A amount of 17,300 afy. The proposed project would complete the water importation project initiated by SGPWA in 1994 by installing a new pipeline across the Santa Ana River that would increase water delivery capacity of the system, allowing SGPWA to receive its maximum Table A water amount of 17,300 afy (8,650 afy greater than the capacity of Phase I), plus additional water amounts that may be available under Article 21. The project would also provide greater system operating flexibility by increasing water storage capacity in the system with construction of the Citrus Reservoir.

As described in Section 2.2 - Purpose and Need of this document, the proposed project is also intended to provide greater system operating flexibility by increasing water storage capacity in the Citrus Reservoir. The additional storage capacity will increase off-peak pumping capabilities, thereby reducing pumping during the peak energy demand period. Water deliveries to SGPWA would be used to remediate over drafted groundwater basins as well as meet direct potable demands. Water delivered to SGPWA through the East Branch Extension would be either recharged into the ground using existing recharge basins, or treated and conveyed to customers for potable use. The proposed project would also increase the SBVMWD's ability to deliver SWP water to the Redlands and Yucaipa Valley areas. Water delivered to SBVMWD through the East Branch Extension would be treated and conveyed to customers in the Yucaipa area for potable use. Untreated water may also be delivered for irrigation uses.

Each of the alternatives to the proposed project is evaluated on its ability to meet the project objectives, listed below:

- Increase the conveyance capacity of the East Branch Extension of the California Aqueduct sufficient to deliver SGPWA's maximum annual SWP Table A amount, when available;
- Allow SBVMWD to meet its delivery commitments in the Yucaipa, Mill Creek, and Eastern Valley Areas using SWP water;
- Use SWP water to maintain adequate groundwater level conditions that exist in the Beaumont Storage Unit;
- Enhance operational flexibility of water deliveries to the SBVMWD and SGPWA service areas;
- Provide additional storage capacity to enhance system reliability and allow more off peak pumping;
- Provide sufficient pumping capacity to adequately support system requirements; and
- Decrease demand on the electrical power grid by decreasing on peak pumping.

6.1.3 Review of Significant and Unavoidable Environmental Impacts

As discussed in Section 6.1.1 above, the range of potential alternatives to be considered in an environmental impact analysis should include those alternatives that can avoid or substantially lessen one or more of the significant effects that would be generated with implementation of the proposed project. Once a reasonable range of alternatives that can meet most of the basic project objectives is identified, these alternatives are evaluated for their ability to avoid or lessen the impacts associated with the proposed project (*CEQA Guidelines* Section 15126.6(b)).

Provided below is a list of the key significant impacts that are identified for the proposed project in Chapters 3.0 and 4.0 of this EIR. The alternatives are evaluated for their ability to avoid or lessen these project impacts.

Implementation of the proposed project would result in a few significant and unavoidable impacts for which there is either no mitigation available or for which, even with mitigation, there would remain an unavoidable impact. The proposed project would also result in several environmental impacts that could be significant, but that would be reduced to less-than-significant level with mitigation. In many cases, there is feasible and well-tested mitigation that can be implemented to reduce these environmental effects of the proposed project.

6.1.3.1 Proposed Project Impacts That Are Significant and Unavoidable

Table ES-1 in the Executive Summary of this EIR presents a summary of project impacts found to be significant, and the proposed mitigation measures that would avoid or minimize potential impacts. The potential significant and unavoidable (SU) impacts associated with constructing the proposed project are listed below:

- Construction air emissions, direct and cumulative;
- Construction noise, direct and cumulative;
- Nighttime construction lighting;
- Cumulative agricultural resources.

6.1.3.2 Proposed Project Impacts That Are Less Than Significant With Mitigation

Table ES-1 in the Executive Summary of this EIR details the key construction and operational impacts that are significant but can be reduced to less-than-significant levels with mitigation (LSM). Chapter 3 of this EIR describes these impacts to each resource area.

6.1.4 Alternatives Evaluated in Previous EIRs

As a result of prior environmental analysis and lead agency decisions, a number of previously studied alternatives are no longer under consideration, and were not reconsidered in this document. A summary of previous EIRs and their analyzed alternatives is below.

The SGPWA prepared a Final EIR for the Water Importation Project in April 1994 (State Clearinghouse number 92112068). The SGPWA Water Importation Project and EIR addressed the planned SGPWA receipt of its longstanding contractual Table A amount of 17,300 acre feet from the SWP for use in groundwater recharge and replenishment, and for extraction, treatment and ultimate potable water distribution to retail water purveyors throughout the SGPWA service area. Based on 1989 population forecasts prepared by the SCAG, the project would have also supplied water for regional growth anticipated by local land use planning agencies.

The 1994 EIR was followed by an Addendum to the Final EIR, certified in June 1996 (Addendum No. 1). The focus of the EIR and Addendum No. 1 was on the construction of facilities necessary to convey untreated SWP water into the SGPWA service area for storage, treatment and distribution to retailers within its boundaries. Although the 1994 document addressed obtaining the full amount of SWP water that is currently proposed for the East Branch Extension Phase II project, the specific facilities were not indicated in the 1994 and 1996 documents. Also, the water treatment facility proposed in earlier reports is not included in later DWR studies. The 1994 EIR included an Alternatives analysis of four primary alternatives:

- Alternative A – No Project Alternative
- Project Alternative B – Ground water recharge only
- Project Alternative C – Water Treatment Only
- Proposed Project Alternative – Included Groundwater recharge and water treatment (Alternatives B and C)

The 1994 EIR also provided a substantial description of its Alternative Screening Analysis, which involved evaluation of delivery points within the SGPWA service area, surface storage reservoirs, groundwater storage/recharge/extraction sites, water treatment plant sites, wholesale treated water distribution turnouts and pipeline alignments to convey both untreated and treated water. The analysis of surface water storage addressed the location and feasibility of an open water surface reservoir in Singleton Canyon. However, due to the high cost of the reservoir, it was found to be economically unfeasible and dropped from the project. Several water treatment plants sites were also investigated, and one location was evaluated in the EIR. However, based on recommendations from subsequent studies, no water treatment facility was constructed as part of the project. Other investigations focused on favorable recharge locations in the largest groundwater basin in the SGPWA area, the Beaumont Storage Unit. Recharge of SWP water into the Beaumont Storage Unit was evaluated in the Phase I EIR.

Three regional options for water importation were also investigated in the 1994 EIR, including the extension of existing SBVMWD/SGPWA facilities, a SWP extension into the upper Coachella Valley, and a Colorado Aqueduct Exchange Project. The Desert Water Agency and the Coachella Valley District declined to participate in the SWP extension since their current exchange program with Metropolitan Water District of Southern California appeared adequate for the foreseeable future. Without assurance of their participation, this alternative was dropped from further consideration. Due to its having the highest requirement for energy consumption, the highest project costs, and the greatest water quality constraints (TDS concentrations in Colorado River water average over 630 mg/l, whereas ambient levels in the Beaumont Storage Unit average 240 mg/l¹), the option of relying upon a water exchange agreement to permit exchange of Colorado River Aqueduct water for SWP water was dropped from further consideration. Therefore, extension of SBVMWD/SGPWA facilities was selected as the most cost effective and environmentally sound water importation option.

Addendum No. 1 was prepared in response to a Writ of Mandate required by the Superior Court in 1996, to demonstrate that the Water Importation Project would be operated to give highest priority to correcting groundwater overdraft. It also evaluated current water production and use, the safe yield of the Beaumont Storage unit, other potential sources of water that could reasonably be available to the SGPWA, and potential growth-inducing impacts of the project. It did not provide further analysis of alternatives to the proposed project.

In 1995, the SGPWA asked DWR to consider implementation of the preferred alternative described in the Water Importation Project EIR as an Extension of the East Branch of the California Aqueduct. DWR subsequently prepared a feasibility study which determined that it had the authority to include the preferred alternative into the SWP. SBVMWD requested participation in the project. DWR certified the SGPWA Water Importation Project as the environmental clearance document for the East Branch Extension and filed a Notice of Determination in compliance with CEQA. DWR subsequently commenced preliminary engineering studies for facility design. In the course of design studies, a portion of the project alignment, as well as other project features were changed to better meet certain engineering objectives and avoid possible significant impacts to threatened and endangered species. Consequently, as lead agency for the project, DWR determined that a Supplemental EIR should be prepared to address changes in the design originally approved for the SGPWA Water Importation Project.

Following the 1996 Feasibility Report, the project description for the East Branch Extension was modified and divided into two phases. Phase I would consist of the modification of the Greenspot Pump Station, Crafton Hills Pump Station, Cherry Valley Pump Station, Crafton Hills Reservoir, Reach I, Reach II and Reach III of the East Branch Extension pipeline. Phase II would include a new pipeline across the Santa Ana River that would provide more capacity from the existing pipeline. In 1997, a Supplemental EIR was prepared by DWR evaluating the East Branch

¹ USGS, 2006; Metropolitan Water District of Southern California, *Regional Urban Water Management Plan*, November 2005.

Extension-Phase I Project. The Supplemental EIR also indicated that there would be a future Phase II of the East Branch Extension, but indicated that the specifics of construction would be evaluated at a later time. The three alternatives addressed in the Supplemental EIR No. 1 included:

- No Project Alternative – addressed the impacts of not developing the Water Importation Project originally approved in 1994 by SGPWA
- Previously Approved Project Alternative – addressed the impacts of developing the Water Importation Project originally assessed in a 1993 EIR and approved in 1994 by SGPWA
- Redesigned Project Alternative (the Phase I proposed project) – addressed the impacts of revising the project to include two alternate pipeline alignments, one of which would include a new reservoir, three alternate pump station layouts/locations, and alternate construction staging area locations.

The Phase I Supplemental EIR was certified by DWR on March 26, 1998 and the Notice of Determination was filed March 27, 1998. Construction on the project (i.e., Redesigned Project Alternative) began on February 9, 1999. Construction was completed and the system brought into service in 2003 providing water to SGPWA and SBVMWD. More recently, two Addenda to the 1994 EIR and 1996 Addendum No. 1 have been prepared and adopted by SGPWA. Due to the focused nature of CEQA Addenda, neither of these documents included an alternatives analysis.

- Addendum No. 2 to the San Geronio Pass Water Agency Water Importation Project Final EIR – Addressing the Yucaipa Valley Water District Application for SGPWA Water Service, January 31, 2007, revised April 11, 2007
- Addendum No. 3 to the San Geronio Pass Water Agency Water Importation Project Final EIR – Addressing the City of Banning Application for SGPWA Water Service, January 31, 2007

6.2 Project Alternatives

For each of the project alternatives identified above in Section 6.1.1, a general description of the alternative is presented, followed by its ability to meet the project objectives and finished with a qualitative discussion of its comparative environmental impacts. As provided in Section 15126.6(d) of the *CEQA Guidelines*, the significant effects of each alternative are identified in less detail than the proposed project. The alternatives address facility location options for the pipeline alternative alignments and the storage reservoir. The following analysis evaluates the No Project Alternative, the Eastern Pipeline Alignments Alternative, and the Storage Reservoir Location Alternative.

Table 6-1 compares the ability for each alternative to meet the project objectives. **Table 6-2** compares the environmental impacts for each alternative.

TABLE 6-1
ABILITY OF PROJECT ALTERNATIVES TO MEET PROJECT OBJECTIVES

Project Objectives	No Project Alternative	Eastern Pipeline Alternative Alignments A, B, C, and F	Eastern Pipeline Alternative Alignments D and E	Storage Reservoir Location Alternative
Increase the conveyance capacity of the East Branch Extension of the California Aqueduct sufficient to deliver SGPWA's maximum annual SWP Table A amount, when available	No	Yes	Yes	Yes
Allow SBVMWD to meet its delivery commitments in the Yucaipa, Mill Creek, and Eastern Valley Areas using SWP water	No	Yes	Yes	Yes
Use SWP water to maintain adequate groundwater level conditions that exist in the Beaumont Storage Unit	No	Yes	Yes	Yes
Enhance operational flexibility of water deliveries to the SBVMWD and SGPWA service areas	No	Yes	Yes	Yes
Provide additional storage capacity to enhance system reliability	No	Yes	Yes	Yes
Provide sufficient pumping capacity to adequately support system requirements	No	Yes	Yes	Yes

SOURCE: Environmental Science Associates, 2007

6.2.1 No Project Alternative

6.2.1.1 Introduction / No Project Description

Pursuant to Section 15126.6(e)(2) of the *CEQA Guidelines*, the No Project Alternative shall:

“...discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time the environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.”

For this EIR under the No Project Alternative, construction of facilities identified under the proposed project would not be implemented. This would maintain the current operation of existing SGPWA and SBVMWD facilities and would include the recently constructed East Branch Extension Phase I facilities. There would be no expansion of SWP deliveries.

**TABLE 6-2
SUMMARY COMPARISON OF PROJECT ALTERNATIVES**

Potential Project Impacts	No Project Alternative	Eastern Pipeline Alternative Alignments A, B, C, and F	Eastern Pipeline Alternative Alignments D and E	Storage Reservoir Location Alternative
Aesthetics	None	Greater (additional pump station)	Greater (additional pump station)	Similar
Air Quality	None	Greater (additional pump station)	Greater (additional pump station)	Similar
Biological Resources	None	Similar	Similar (less impact on SAR Wash listed species but two water crossings required)	Greater (more biological resources than the orchard)
Cultural Resources	None	Greater (may affect structures on Lockheed site)	Similar	Greater (may affect structures on Lockheed site)
Geology and Soils	None	Similar	Greater (within AP Zones)	Similar
Hazardous Materials	None	Similar	Similar	Similar
Hydrology and Water Quality	None	Greater (displaces percolation ponds)	Greater (two river crossings)	Greater (displaces percolation ponds)
Land Use	None	Lesser (further from airport)	Lesser (further from airport)	Lesser (no direct or cumulative agricultural impacts)
Noise and Vibration	None	Greater (additional pump station)	Greater (additional pump station)	Similar
Public Services and Utilities	None	Similar	Similar	Similar
Recreation	None	Similar	Similar	Similar
Traffic and Circulation	None	Greater (longer haul route)	Greater (longer haul route)	Similar

SOURCE: Environmental Science Associates, 2007

6.2.1.2 Ability to Meet Project Objectives

The No Project Alternative would not meet any of the project objectives. The No Project Alternative would maintain the current operations of the Phase I facilities but would not provide for increased water deliveries, improved design capacity, or improved operational reliability and flexibility of the Phase I facilities. The SGPWA may not be able to receive the full amount of SWP water that it has contracted for, and SBVMWD would not meet its delivery commitments in the Yucaipa, Mill Creek, and Eastern Valley Areas.

6.2.1.3 Environmental Impact Comparison with the Proposed Project

Selection of the No Project Alternative would eliminate construction and operational impacts associated with the proposed project. As discussed in Chapter 3 of this EIR, implementation of the proposed project would generate significant and unavoidable direct and cumulative impacts to air quality, significant and unavoidable direct lighting impacts from nighttime construction,

significant and unavoidable direct and cumulative noise impacts, and significant and unavoidable cumulative agricultural impacts. The No Project Alternative would also avoid essentially all of the less-than-significant impacts identified with implementation of the proposed project.

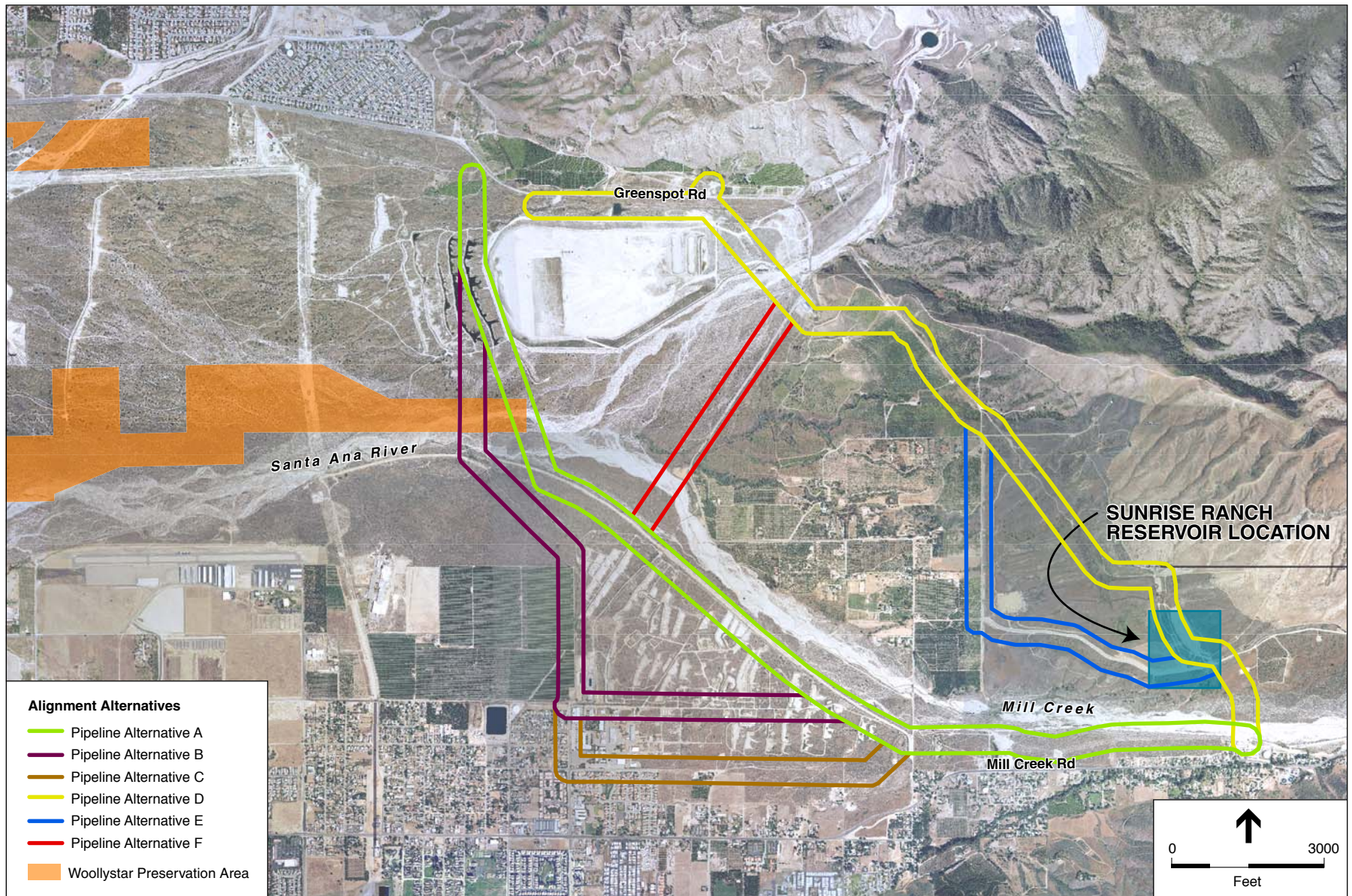
Implementation of the No Project Alternative would result in less water being available to augment groundwater levels in the Beaumont Storage Unit. The groundwater basin could experience greater extraction pressures and groundwater levels could decline. Local water suppliers would need to identify alternative sources of water, impose aggressive conservation measures, or consider limiting future development in the area. The SGPWA and SBVMWD could resume plans to develop other water supply sources including Colorado River water. Previous alternatives analysis conducted by SGPWA identified that Colorado River water would affect groundwater quality since it has a higher average TDS than SWP water. Furthermore, Colorado River water supplies available to California are diminishing and demands on the supply are increasing, which reduces its potential availability for use in the SGPWA service area.

6.2.2 Eastern Pipeline Alternative Alignments

6.2.2.1 Introduction

DWR evaluated other pipeline route alternatives that could convey water from the Foothill Pipeline to the Crafton Hills Pump Station. DWR considered six pipeline routes east of the proposed project alternative alignments evaluated in Chapter 3 of this EIR. As a group, these alternative alignments are identified as the Eastern Pipeline Alternative Alignments. **Figure 6-1** shows the location of the alternative alignments. Three alternative alignments (Alternative Alignments A, B, and C) are very similar to the proposed project, but would cross the Santa Ana River wash approximately 3,000 feet east of the proposed project. This group of alternative alignments could accommodate a storage reservoir in the SBVMWD recharge area west of Mill Creek. Two alternative alignments (Alternative Alignment D and E) would follow Greenspot Road east and cross the Santa Ana River east of the Mill Creek confluence. The alternative alignments would then cross Mill Creek near the Crafton Hills Pump Station. These two alternative alignments would require a storage reservoir near the Sunrise Ranch property. This property is located north of Mill Creek, nearly across from the Crafton Hills Pump Station (see Figure 6-1). One alternative alignment (Alternative Alignment F) would combine the two general alternative alignments described above by following Greenspot Road east across the Santa Ana River and then crossing Mill Creek near the confluence of the two water courses. This alternative alignment could accommodate a storage reservoir within the SBVCWD recharge area, similar to Alternative Alignments A, B, and C.

The storage reservoir for Alternative Alignments A, B, C, and F could have a storage capacity similar to the proposed project but would require an additional pump station to have the same flow volume as the proposed project to overcome greater elevation. This additional pump would require increased construction activities and a greater long-term use of energy. Furthermore, Alternative Alignments D and E would also require another in line booster pump station to overcome the increased elevation. The Sunrise Ranch property is also located at a much higher



SOURCE: GlobeXplorer, 2007; ESA 2008.

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Figure 6-1
Eastern Pipeline Alignment Alternatives

elevation than the proposed reservoir location, a reservoir at this location would also require an additional pump station to be equal to flow volumes of the proposed project. These additional pump stations would require increased construction activities and a greater long-term use of energy.

6.2.2.2 Ability to Meet Project Objectives

This Eastern Pipeline Alternative Alignments would meet most of the objectives of the project. The pipeline would increase conveyance capacity of the East Branch Extension to provide the capacity of delivering SGPWA's full Table A amount and would allow the SBVMWD to meet delivery commitments to the Yucaipa, Mill Creek, and Eastern Valley areas. This alternative would also meet the project objective of maintaining adequate groundwater levels in the Beaumont basin. This alternative would also meet the project objective of providing adequate pumping capacity to support the system requirements. However, regardless of which eastern alternative alignment was to be selected, an additional pump station would be required to overcome increased elevation. This additional pump station would reduce the systems efficiency by increasing energy demands.

6.2.2.3 Environmental Impact Comparison With The Proposed Project

The following sections evaluate the potential environmental impacts of the Eastern Pipeline Alternative Alignment. The evaluations compare the alternative with the level of impact identified for the proposed project.

Aesthetics

Impacts to local aesthetics resulting from the Eastern Pipeline Alternative Alignments would be greater than the proposed project because another pump station would be required to match the flow volume of the proposed project. Once constructed the pipeline would be entirely underground. Similar to the proposed project, the construction corridor would be visible for a period of years but would eventually revegetate under the management prescribed in a restoration plan. While aesthetic impacts are expected to be greater due to the required construction of an additional pump station, impacts would continue to be less than significant.

Air Quality

Construction of the eastern alternative alignments would result in air quality impacts that would be slightly greater than the proposed project. All of the eastern alternative alignments would require an additional in line booster pump station to provide the same flow volumes as the proposed project. Construction and operation of this additional pump station would have greater air emissions than the proposed project. Similar to the proposed project impacts to air quality would remain significant and unavoidable, since the daily construction emissions would likely exceed thresholds of significance. Operational air emissions would be greater for the eastern alternative alignments due to the additional energy requirements of the additional pump station.

Biology

Each alternative alignment would affect habitats that may or may not support federally or state-listed species. Alternative Alignments A, B, C and F would have similar impacts to the proposed project on federally listed species. Alternative Alignments D and E would reduce the potential impact on the San Bernardino kangaroo rat and the listed plant species because these alternative alignments would generally avoid the Santa Ana River wash area; which supports these species. Alternative Alignments D, E, and F would avoid the Woollystar Preservation Area. However, the potential would remain for impacting sensitive species including the woollystar and San Bernardino kangaroo rat and California coastal gnatcatcher. Each alternative alignment would require the construction of an additional in line booster pump station; the footprint of which may have an effect on sensitive species. Additionally, these alternative alignments would require two river crossings that could affect riparian areas further upstream from the proposed project river crossing, resulting in a potentially greater impact on riparian species.

Cultural Resources

No site specific technical studies for cultural resources were conducted along the eastern pipeline alternative alignments. Each alternative alignment would have a similar potential to encounter previously unknown cultural resources. However, construction of a storage reservoir within the old Lockheed site now used for groundwater recharge could affect the structures in the area. Although the historic significance of these structures has not been determined and their eligibility for listing on the national register of historic places is undetermined, affecting the structures may reduce their integrity or affect their historic value. Nonetheless, impacts would be greater than the proposed project alternative alignments.

Geology

For Alternative Alignments A, B, and C, exposure to geologic hazards would be similar to the proposed project. Alternative Alignments D, E, and F would be located in slightly higher elevation and would be constructed in areas with more varied terrain and would cross Alquist-Priolo hazard zones that would subject the facilities to potential surface rupture hazards.

Hydrology

Alternative Alignments A, B, and C would affect local surface water courses similar to the proposed project. Placing a storage reservoir in the recharge area east of Crafton would reduce groundwater recharge in the area. The crossing of Mill Creek by Alternative Alignments D, E, and F could affect the flood control system on the southern bank requiring substantial design work and coordination with the San Bernardino County Flood Control District. Overall, it is assumed that impacts would be greater due to displacement of groundwater recharge basins and due to the additional stream crossing required.

Hazards

Excavated soil in the former Lockheed property could contain low levels of contamination from past land uses. Soils excavated for construction of the reservoir in this area would have to be

tested and potentially treated prior to disposal. Otherwise impacts of construction and operation of the eastern alternative alignments would be similar to the proposed project.

Land Use

The potential land use impacts associated with converting agriculture to non-agricultural uses would be avoided under this alternative. However, other land uses including rural residential would be affected by construction and some land would be converted for the two pump stations. The alternative project would have less of an effect on the Redlands Municipal Airport land use compatibility zones than the proposed project. In other respects, operational impacts of this alternative would be similar to the proposed project. Land use compatibility impacts would be slightly reduced compared to the proposed project.

Public Services and Utilities

For each of the eastern alternative alignments, the green waste generated from the removal of citrus trees under the proposed project would be avoided. Construction impacts associated with installation of the pipeline would be similar to the proposed project. There would be a greater energy demand as a result of the additional pump station required. Impacts would be similar to the proposed project.

Traffic

Traffic impacts would be similar or slightly greater than the proposed project due to longer haul routes. Import and export material would require a slightly longer haul route than the proposed project, assuming most material/equipment is delivered from the urban areas to the west. The reservoir location associated with Alternative Alignments D and E would also require a longer excavation haul route than the proposed project.

6.2.3 Reservoir Location Alternative

6.2.3.1 Introduction/Reservoir Location Alternative Description

This alternative would place a reservoir to the east of the proposed project's location; within SBVWCD's groundwater recharge area. **Figure 6-2** shows the location of this reservoir alternative. The shape and dimensions of this alternative reservoir would be different than the proposed Citrus Reservoir but the capacity would be the same. This location has a potentially higher groundwater table; therefore the reservoir could not be as deep, requiring a larger surface area to accommodate the same capacity as the proposed project.

6.2.3.2 Ability to Meet Project Objectives

Similar to the proposed project, this alternative reservoir location would meet the project objectives. However, the elevation of this site is higher than the proposed reservoir location. In order to provide the same flow volume as the proposed project an additional pump station would



SOURCE: GlobeXplorer, 2007; ESA 2007.

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Figure 6-2
Alternative Storage
Reservoir Locations

be required. This additional pump station would reduce the systems efficiency by increasing energy demands.

6.2.3.3 Environmental Impact Comparison With the Proposed Project

This alternative would require the construction of approximately six miles of pipeline, excavation of a reservoir, construction of two new pump stations, and the expansion and pump addition to existing pump stations. The magnitude and scale of the construction required for this alternative would be greater than proposed project due to the additional pump station required to overcome greater elevation differences.

Construction Impacts

As stated above, construction activities associated with this alternative would be similar to the proposed project. The construction impacts, both significant and less than significant with mitigation for aesthetics, air quality, biology, cultural resources, geology, hazards, hydrology, land use, noise, public services, and traffic that would occur under the proposed project would also occur under this alternative. However, the construction activities would be slightly greater due to the requirement of an additional pump station under this alternative.

Operational Impacts

Placing the reservoir in the groundwater recharge area would avoid the significant and unavoidable cumulative agricultural impact associated with the proposed project. Groundwater recharge basins would be displaced under this alternative, resulting in greater impacts to groundwater recharge. Due to the potentially shallow groundwater at this location, the reservoir would have a larger surface area and reduced depth compared to the proposed project. Shallow reservoirs, similar to this alternative, frequently require increased operational and maintenance efforts to maintain water quality. This reservoir location would potentially have greater impacts on biological resources as the habitat value is higher in the groundwater recharge basins compared to the citrus orchard. Locating a reservoir with a large surface area at this site would likely require removing structures within the Lockheed property. If these structures were found to have historic significance, then the impact would be greater than under the proposed project. Overall impacts would be greater under this alternative compared to the proposed project.

6.3 Environmentally Superior Alternative

CEQA requires that an EIR identify the environmentally superior action alternative. Table 6-2 compares the alternatives to the proposed project discussed in this section. The Eastern Pipeline Alternative Alignments and Storage Reservoir Location Alternative would each result in environmental impacts that would be slightly greater than the proposed project with a few exceptions. Impacts to the airport operations would be reduced slightly under the eastern alternative alignments. Impacts associated with agricultural conversion would also be reduced under the eastern alternative alignments and alternate reservoir location alternatives. Impacts to aesthetics and air quality would be greater under the eastern alternative alignment because additional booster pumps would be required. Impacts to biology and hydrology would also be

greater under the alternatives due to additional stream crossings and conversion of groundwater recharge basins. Additionally, the eastern alternative alignments and the alternate reservoir location would require a second pump station. This pump station would result in greater energy demands than the proposed project. This additional power would result in higher costs and increased operational emissions from off-site power generation sources. The proposed project would be the environmentally superior action alternative since it would be the most energy-efficient alternative, minimize impacts to biological resources, and provide the greatest operational flexibility.

6.4 Summary Comparison of Proposed Project Pipeline Alternative Alignments 1 – 4

This section compares the pipeline alternative alignments among the four routes analyzed as the proposed project in Chapter 3 of this EIR. **Table 6-3** compares impacts identified for each of the four potential alternative alignments. Each alternative alignment is rated with a low (1), medium (2), or high (3) impact scale. Thus, the alternative alignment with the lowest total number is assumed to result in the least impact. As shown in the table, the alternative alignments would result in similar impacts with few differences, although Alternative Alignments 3 and 4 would have the fewest impacts and are therefore the environmentally superior alternative alignments of the proposed project.

TABLE 6-3
SUMMARY COMPARISON OF PROPOSED PROJECT ALTERNATIVE ALIGNMENTS

Issue Area	Alternative Alignment 1	Alternative Alignment 2	Alternative Alignment 3	Alternative Alignment 4
Aesthetics	1	1	1	1
Air Quality	3	3	3	3
Biology	2	3	2	2
Cultural	1	1	1	1
Geology	1	1	1	1
Hazardous Materials	1	1	1	1
Hydrology	1	1	1	1
Land Use	1	1	1	1
Noise and Vibration	2	3	1	1
Public Services/Utilities	1	1	1	1
Transportation and Traffic	1	2	1	1
Total	15	18	14	14

SOURCE: Environmental Science Associates, 2007

6.4.1 Proposed Project Alignment Impact Comparison

Aesthetics

Each of the Alternative Alignments 1 through 4 would result in similar effects to local aesthetics.

Air Quality

Each of the Alternative Alignments 1 through 4 would result in similar air emissions during construction and long-term operation.

Biology

Alternative Alignment 2 would result in greater biological impacts since the north-south segment would not be within the MWD Inland Feeder alignment construction zone. Discussions with USFWS have confirmed that remaining within the Inland Feeder construction zone would pose fewer impacts to valuable biological resources than other proposed river crossing alternative alignments. Although the restoration plan is on-going for the Inland Feeder construction zone, USFWS staff indicated that disruption of the previously disturbed areas would have less impact on mature habitat. Alternative Alignments 1, 3, and 4 would have similar impacts to biological resources as evaluated in Chapter 3 of this EIR.

Cultural Resources

Potential impacts to historic resources or unknown cultural resources would be similar for each of the alternative alignments.

Geology

Potential impacts to geology would be similar for each of the alternative alignments.

Hazardous Materials

Potential impacts from hazardous materials would be similar for each of the alternative alignments.

Hydrology

Potential impacts to local hydrology would be similar for each of the alternative alignments.

Land Use

Potential impacts to land uses would be similar for each of the alternative alignments.

Noise and Vibration

Potential impacts from noise and vibration would be greatest under Alternative Alignment 2 since the east-west segment would be in close proximity to residences on Crafton Avenue and Madeira Avenue. Vibration impacts could also affect the commercial buildings east of Crafton Avenue adjacent to Alternative Alignment 1.

Public Services and Utilities

Impacts to public services would be similar for each of the alternative alignments.

Traffic

Impacts to traffic from construction would be greater for the east-west segments of Alternative Alignment 2 since it would involve installation of the pipeline within Crafton Avenue and Madeira Avenue.

6.4.2 Summary

Alternative Alignment 2 would pose the greatest environmental constraints due to the proximity of the construction zone within city streets and near residences. The north-south segment of Alternative Alignment 2, across the Santa Ana River wash, would affect substantially more previously undisturbed natural habitats which would be a greater impact to biological resources compared to the north-south segment of Alternative Alignment 1. The east-west segments of Alternative Alignment 1 would also pose greater vibration impacts to the commercial buildings east of Crafton Avenue. Alternative Alignments 3 and 4 would pose the fewest environmental impacts of the alignment alternatives evaluated at an equal level of detail in this EIR.

Alternative Alignments 3 and 4 of the proposed project (as shown on Figure 2-1) would be environmentally superior to the other alternative alignments since they would avoid impacts to previously undisturbed biological resources within the Santa Ana River wash (as compared with the north-south segment of Alternative Alignment 2) and would avoid potential impacts to noise, vibration, and traffic.

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CHAPTER 7

Mitigation Monitoring and Reporting Plan

Introduction

This Mitigation Monitoring and Reporting Program (MMRP) report includes mitigation measures identified in the Draft Environmental Impact Report (EIR) that are required to address impacts associated with the project. The impacts associated with this project and required mitigation measures are summarized in this program; the full text of the impact analysis and mitigation measures is presented in the DWR East Branch Extension Phase II EIR. The EIR analyzed the impacts for the proposed project. This MMRP outlines the mitigation monitoring and reporting for the proposed project.

The MMRP is organized in a table format keyed to each impact and adopted mitigation measure. Each mitigation measure is set out in full, followed by a tabular summary of monitoring requirements. Monitoring requirements include implementation procedure, monitoring and reporting requirements, monitoring responsibility, and monitoring schedule. Implementation procedure is a checklist of actions required to successfully effectuate the mitigation measure. Monitoring and reporting action as a checklist of actions to successfully complete each implementation procedure. Monitoring responsibility names the responsible party for each implementation procedure and the associated monitoring and reporting action. Finally, the monitoring schedule outlines the phase of the project (e.g., project design, construction, operation, etc.) when each implementation procedure and associated monitoring and reporting action must occur.

DWR East Branch Extension Phase II

Aesthetics

Visual Character: The proposed project would have a less- than-significant impact on the visual character of the surrounding areas with incorporation of mitigation measures.

Mitigation Measure AES-1: DWR shall ensure that citrus trees are left in place between the reservoir and adjacent streets and maintained as a visual screen of the Citrus Reservoir and Citrus Pump Station from views on San Bernardino Avenue and Opal Avenue. At least four rows of citrus trees shall be maintained between the roadways and the project components. Trees removed during construction in this visual screen area shall be replaced.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Including AES-1 in the construction contract specification.	1. Ensure a contract has been executed with a farming company.	1. DWR	1. During construction 2. After construction

Light and Glare: The proposed project would have both significant and unavoidable and less-than-significant impacts regarding light and glare.

Mitigation Measure AES-2: DWR shall ensure that lighting used for nighttime construction is shielded and directed downward to minimize impacts to neighboring residential areas. The construction contractor shall submit a nighttime lighting plan to DWR for review and approval.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Conditions of AES-2 shall be included on all construction drawings.	1. Perform site inspections to verify contractor compliance. Retain inspection records in the project file.	1. DWR	1. During construction

Mitigation Measure AES-3: DWR shall ensure that all exterior lighting is shielded and directed downward to minimize impacts to neighboring residential areas. If necessary to reduce light casting, landscaping shall be provided around proposed facilities. The vegetation shall be selected, placed and maintained to minimize off-site light and glare onto surrounding areas. In addition, highly reflective building materials and/or finishes shall not be used in the design for proposed structures.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Conditions of AES-3 shall be included on all construction drawings.	1. DWR shall approve the proposed lighting design for the project and ensure that the contractor implements the lighting during the construction phase.	1. DWR	1. Prior, during, and post construction

Air Quality

Consistency with Air Quality Management Plans: The proposed project would not conflict with or obstruct implementation of the applicable air quality plan.

Mitigation Measures AQ-1: DWR shall ensure that contractors implement a fugitive dust control program pursuant to the provisions of SCAQMD Rule 403.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include AQ-1 in the construction contract specification.	1. DWR shall notify contractors of this requirement during contract negotiations and inspect equipment during construction.	1. DWR	1. During construction

Mitigation Measure AQ-2: DWR shall ensure that construction equipment is properly tuned and maintained in accordance with manufacturer's specifications.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include AQ-2 in the construction contract specification.	1. DWR shall notify contractors of this requirement during contract negotiations.	1. DWR	1. During construction

Mitigation Measure AQ-3: DWR shall ensure that contractors maintain and operate construction equipment so as to minimize exhaust emissions. During construction, trucks and vehicles in loading and unloading queues would turn their engines off when not in use to reduce vehicle emissions.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include AQ-3 in the construction contract specification.	1. DWR shall notify contractors of this requirement during contract negotiations. Truck drivers shall be notified by the construction foreman of this requirement.	1. DWR	1. During construction

Mitigation Measure AQ-4: Electricity from power poles rather than temporary diesel- or gasoline-powered generators shall be used where power is available within 100 feet of construction area.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include AQ-4 in the construction contract specification.	1. DWR shall notify contractors of this requirement during contract negotiations.	1. DWR	1. During construction

Mitigation Measure AQ-5: In accordance with the California Air Resource Board's Idling Vehicle Rule, DWR shall ensure that construction vehicles are prohibited from idling in excess of five minutes, both on- and off-site.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include AQ-5 in the construction contract specification.	1. DWR shall notify contractors of this requirement during contract negotiations. Truck drivers shall be notified by the construction foreman of this requirement.	1. DWR	1. During construction

Mitigation Measure AQ-6: DWR shall ensure that coatings and solvents used in the project are consistent with applicable SCAQMD rules and regulations.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include AQ-6 in the construction contract specification.	1. DWR shall notify contractors of this requirement during contract negotiations.	1. DWR	1. During construction

Mitigation Measure AQ-7: Dust control measures such as wetting or use of soil binders shall be implemented on haul roads in front of residences on Cone Camp Road periodically (a minimum of 3 times daily) throughout each construction day to minimize dust emissions at the closest sensitive receptors.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include AQ-7 in the construction contract specification. Construction drawings shall identify sensitive receptors and the roadways that should be maintained to reduce dust.	1. DWR shall notify contractors of this requirement during contract negotiations.	1. DWR	1. During construction

Mitigation Measure AQ-8: Construction vehicle speeds would be no greater than 15 miles per hour passing residences on Cone Camp Road.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Speed limit signs shall be installed at the construction site.	1. DWR shall notify contractors of this requirement during contract negotiations.	1. DWR	1. During construction

Mitigation Measure AQ-9: Wheel washers shall be installed where vehicles exit the construction site onto paved roads.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Wheel washing locations shall be included on all construction drawings.	1. DWR shall notify contractors of this requirement during contract negotiations.	1. DWR	1. During construction
2. The washers shall be installed and maintained through the construction period.	2. DWR shall approve the planned location and ensure that the wheel washers are installed prior to trucks leaving the site.		

Mitigation Measure AQ-10: Haul vehicles shall be covered or shall comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Including AQ-10 in the construction contract specification.	1. DWR shall notify contractors of this requirement during contract negotiations. Truck drivers shall be notified by the construction foreman of this requirement.	1. DWR	1. During construction

Violation of an Air Quality Standard: The proposed project would emit air pollutants in daily quantities that could exceed SCAQMD significance thresholds during construction.

Mitigation Measures: Implement AQ-1 through AQ-10.

Cumulative Air Emissions: The proposed project would result in a significant and unavoidable adverse impact to cumulative air quality.

Mitigation Measures: Implement AQ-1 through AQ-10.

Effects on Sensitive Receptors: The proposed project would result in a significant and unavoidable impact to sensitive receptors.

Mitigation Measures: Implement AQ-1 through AQ-10.

Odor Impacts: The proposed project would not create objectionable odors that would significantly affect a substantial amount of people.

Mitigation Measures: Implement AQ-5.

Biological Resources

Sensitive Species and Habitats: The proposed project would have a less than significant impact on riparian habitats or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS with implementation of mitigation measures.

Mitigation Measure BIO-1: DWR shall have a qualified biologist conduct a pre-construction spring/summer floristic inventory and rare plant survey of the selected alternative to determine and map the location and extent of special-status plant species populations within the construction right-of-way.

DWR shall provide proof of compliance with the FESA and CESA for potential impacts on the on the federal and state listed endangered Santa Ana River woollystar and slender-horned spineflower in the form of a take permit/authorization or written documentation from the USFWS and CDFG that the proposed project would not result in take of the two plant species or would otherwise not adversely affect the species. Should a take permit/authorization be required, or conditions imposed by the USFWS and CDFG to ensure that no jeopardy would result from the project, the applicant shall implement all the terms and conditions of the USFWS and CDFG permit, authorization, or recommendations to the satisfaction of the USFWS and CDFG.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction, a qualified biologist shall conduct the required survey.	1. DWR shall notify contractors of this requirement during contract negotiations. All construction personnel shall be notified by the construction foreman of this requirement and any areas to avoid.	1. DWR r	1. Prior to construction
2. DWR shall submit survey results to CDFG and USFWS.			

Mitigation Measure BIO-2: DWR shall minimize impacts on special-status plant species by reducing the construction right-of-way through areas with documented occurrences of special-status plant species.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction, DWR will contract a qualified biologist to map and designate a feasible construction right-of-way.	1. DWR shall notify contractors of this requirement during contract negotiations. All construction personnel shall be notified by the construction foreman of this requirement and any areas to avoid.	1. DWR	1. Prior to construction

Mitigation Measure BIO-3: DWR shall stake, flag, fence, or otherwise clearly delineate the construction right-of-way that restricts the limits of construction to the minimum necessary to implement the project that also would minimize impacts on special-status plants and RAFSS habitat.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction and under the direction of a qualified biologist, DWR shall clearly delineate the construction right-of-way (stake, flag, fence, etc.).	1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid.	1. DWR and Construction Contractor	1. Prior to construction 2. During construction and any on-site activities.

Mitigation Measure BIO-4: DWR shall salvage and stockpile the top 12 inches of soil in the construction zone, including plant material and duff for use in the restoration efforts.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. DWR shall salvage and stockpile the top 12 inches of soil in the construction zone, including plant material and duff.	1. DWR shall notify contractors of this requirement during contract negotiations. All construction personnel shall be notified by the construction foreman of this requirement.	1. DWR and Construction Contractor	1. During construction

Mitigation Measure BIO-5: DWR shall prepare and implement a special-status species and RAFSS habitat restoration plan, approved by the USFWS and CDFG for unavoidable temporary impacts on special-status plants and RAFSS habitat that includes at a minimum the following measures:

- The results of the floristic inventory and rare plant survey that documents the location and extent of special-status plant species occurrences and quantifies the temporary and permanent impacts based on acres of habitat, individual plants, and/or other means to clearly articulate the unavoidable impacts.
- A restoration plan for areas of temporary impact that includes:

- Goals and objectives for the RAFSS and special-status plant species restoration plan that establishes the quantifiable criteria for successful implementation and completion of the restoration plan.
- A salvage and replacement program for the top 12 inches of surface material and topsoil including plant material and duff. The program will identify soil preparation requirements including grain size that will need to be engineered or amended on site to match to the greatest extent feasible the existing surface soil conditions.
- A salvage and replanting program for perennial special-status species.
- An invasive plant species maintenance, monitoring, and removal program.
- Success criteria that establishes yearly thresholds for growth and reestablishment of RAFSS habitat.
- Success criteria that establishes yearly thresholds for growth and establishment of special-status plant species on an acreage extent of occurrence or per plant basis.
- Success criteria that establishes the ultimate threshold for meeting the goals, objectives, and FESA/CESA permit conditions.
- A five-year maintenance and monitoring plan to ensure successful implementation of the restoration plan and meeting the goals, objectives, and FESA/CESA permit conditions.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction, DWR shall have a qualified biologist prepare a special-status plants and RAFSS habitat restoration maintenance and monitoring plan.	1. DWR shall notify contractors of this requirement during contract negotiations.	1. DWR and Construction Contractor	1. Prior to construction and in accordance with habitat restoration plan requirements.
2. DWR will implement the special-status plant species and RAFSS habitat restoration plan prior to construction activities and submit to USFWS and CDFG following project completion.	2. DWR will submit scheduled status reports, as designated in the maintenance and monitoring plan, to USFWS/CDFG regarding special-status plants/RAFSS habitat status and habitat restoration fulfillment.		

Mitigation Measure BIO-6: DWR shall prepare and implement a special-status species and RAFSS habitat compensation plan, approved by the USFWS and CDFG, for unavoidable permanent impacts on special-status plants within RAFSS habitat that includes at a minimum the following measure:

- Purchase of compensatory mitigation lands or credits at a USFWS and CDFG approved conservation bank at a minimum 2:1 ratio (or that required by the USFWS and CDFG permit conditions) for the preservation in perpetuity and dedication in deed restriction, conservation easement, or some other suitable land conservation instrument over RAFSS habitat with known occurrences of Santa Ana River woollystar and slender-horned spineflower.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction, DWR shall purchase compensatory mitigation lands or credits at a USFWS or CDFG approved conservation bank.	1. DWR shall obtain confirmation of receipt of purchase compliance from CDFG and USFWS prior to any on-site activities.	1. DWR	1. Prior to construction and any on-site activities
2. DWR will submit a purchase compliance to CDFG and USFWS.			

Mitigation Measure BIO-7: DWR shall have a qualified biologist conduct a pre-construction protocol survey for the SBKR within the selected alternative alignment to determine and map the location and extent of SBKR occurrence(s) within the construction right-of-way.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction, DWR shall contract a qualified biologist to conduct the required protocol survey and map the location of SBKR occurrences.	1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid.	1. DWR r	1. Prior to construction
2. DWR shall submit survey results to CDFG and USFWS.			

Mitigation Measure BIO-8: DWR shall have a qualified biologist conduct a pre-construction spring/summer active season general reconnaissance and trapping surveys for the special-status ground dwelling species within the selected alternative alignment to determine and map the location and extent of special-status species occurrence(s) within the construction right-of-way.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction, DWR shall contract a qualified biologist to conduct the required protocol survey and map the location of any special status occurrences.	1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid.	1. DWR	1. Prior to construction
2. DWR shall submit survey results to CDFG and USFWS.			

Mitigation Measure BIO-9: DWR shall minimize impacts on SBKR and other special-status ground dwelling species by reducing the construction right-of-way through areas of potential occurrences.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction, DWR shall contract a qualified biologist to designate a feasible construction right-of-way for SBKR and other special-status ground dwelling species.	1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid.	1. DWR	1. Prior to construction 2. During construction and any on-site activities

Mitigation Measure BIO-10: DWR shall stake, flag, fence, or otherwise clearly delineate the construction right-of-way that restricts the limits of construction to the minimum necessary to implement the project that also would minimize impacts on special-status wildlife species and RAFSS habitat.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction and under the direction of a qualified biologist, DWR shall clearly delineate the construction right-of-way (stake, flag, fence, etc.).	1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid.	1. DWR and Construction Contractor	1. Prior to construction 2. During construction and any on-site activities

Mitigation Measure BIO-11: DWR shall install a silt fence or some other impermeable barrier to SBKR to exclude SBKR and other small wildlife species from entering the active work areas. Exclusion fencing can be limited to areas of documented occurrences of special status wildlife. Exclusion fencing shall be required during all nighttime construction activities.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction, DWR shall install silt fencing or other impermeable barrier to exclude small wildlife species from entering active work areas. 2. DWR shall contract an environmental monitor to ensure the proper installation and maintenance of exclusionary fencing.	1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 2. DWR shall provide and notify the environmental monitor of all requirements.	1. DWR and Construction Contractor	1. Prior to construction 2. During construction and any on-site activities

Mitigation Measure BIO-12: If approved by the USFWS, DWR shall have qualified biologists permitted or otherwise approved by the USFWS conduct a pre-construction SBKR trapping and relocation effort to minimize take of the SBKR during construction.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. Prior to construction and pending approval of USFWS, DWR shall contract qualified biologists to conduct pre-construction SBKR trapping and relocation efforts. 2. DWR shall provide USFWS and CDFG proof of compliance with FESA and CESA. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 	<ol style="list-style-type: none"> 1. DWR 	<ol style="list-style-type: none"> 1. Prior to construction

Mitigation Measure BIO-13: If approved by the USFWS, DWR shall have qualified biologists permitted or otherwise approved by the USFWS conduct construction monitoring to capture and relocate SBKR out of harms way as an effort to further minimize take of the SBKR during construction.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. Pending approval by USFWS, DWR shall contract qualified biologists to conduct construction monitoring, including efforts to capture and relocate SBKR as necessary. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 2. DWR shall provide and notify the qualified biologist of all requirements. 	<ol style="list-style-type: none"> 1. DWR 	<ol style="list-style-type: none"> 1. During construction and any on-site activities

Mitigation Measure BIO-14: DWR shall have a qualified biologist conduct pre-construction and construction capture, salvage, and relocation effort to remove special-status ground dwelling wildlife species, and other common species, out of harms way to minimize impacts on these species.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. DWR shall have a qualified biologist on-site during all pre-construction and construction efforts to capture, salvage, and/or relocate special-status ground dwelling species and other common species as necessary. 2. DWR shall submit survey results to CDFG and USFWS. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 2. DWR shall provide and notify the qualified biologist of all requirements. 	<ol style="list-style-type: none"> 1. DWR 	<ol style="list-style-type: none"> 1. Prior to construction, during construction, and during any on-site activities.

Mitigation Measure BIO-15: DWR shall prepare and implement a special-status wildlife species and RAFSS habitat restoration plan as a part of that specified for special-status plants in Mitigation Measure **BIO-5**, approved by the USFWS for unavoidable temporary impacts on special-status wildlife species and RAFSS habitat that includes at a minimum the following measures:

- The results of the pre-construction surveys that documents the location and extent of special-status ground dwelling wildlife species occurrences and quantifies the temporary and permanent impacts based on acres of occupied habitat, and/or other means to clearly articulate the unavoidable impacts.
- A restoration plan for areas of temporary impact that shall be consistent with that prepared for the special-status plant species in Mitigation Measure BIO-5 and that includes at a minimum:
 - Goals and objectives for the RAFSS and special-status wildlife species restoration plan that establishes the quantifiable criteria for successful implementation and completion of the restoration plan.
 - An invasive plant species maintenance, monitoring, and removal program.
 - Success criteria that establishes yearly thresholds for growth and reestablishment of suitable SBKR RAFSS habitat on an acreage basis.
 - Success criteria that establish the ultimate threshold for meeting the goals, objectives, and FESA permit conditions.
 - A minimum five-year maintenance and monitoring plan to ensure successful implementation of the restoration plan and meeting the goals, objectives, and FESA permit conditions.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction, DWR shall have a qualified biologist prepare a special-status wildlife species and RAFSS habitat restoration maintenance and monitoring plan as a part of that specified for special-status plants in Mitigation Measure BIO-5 . 2. DWR will implement the special-status wildlife species and RAFSS habitat restoration plan prior to construction activities and submit to USFWS and CDFG following project completion.	1. DWR shall notify contractors of this requirement during contract negotiations. 2. DWR will submit scheduled status reports, as designated in the maintenance and monitoring plan, to USFWS/CDFG regarding special-status wildlife/RAFSS habitat status and habitat restoration fulfillment.	1. DWR	1. Prior to construction

Mitigation Measure BIO-16: DWR shall prepare and implement a special-status wildlife species and RAFSS habitat compensation plan, approved by the USFWS for unavoidable permanent impacts on SBKR and special-status ground dwelling wildlife species occurring within RAFSS habitat that includes at a minimum the following measure:

- Purchase of compensatory mitigation lands or credits at a USFWS approved conservation bank at a ratio of 2:1 or as required by the USFWS and permit conditions for the preservation in perpetuity and dedication in deed restriction, conservation easement, or some other suitable land conservation instrument over RAFSS habitat with known occurrences of SBKR. This compensatory mitigation

can be satisfied under the same habitat acquisition/conservation credit program under Mitigation Measure **BIO-6** as approved by USFWS and compatible for both the impacted plant and wildlife species and RAFSS habitat.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. Prior to construction, DWR will implement habitat conservation plans and purchase compensatory mitigation lands or credits at a USFWS or CDFG approved conservation bank. 2. DWR will submit a purchase compliance to CDFG and USFWS. 	<ol style="list-style-type: none"> 1. DWR shall obtain confirmation of receipt of purchase compliance from CDFG and USFWS prior to any on-site activities. 	<ol style="list-style-type: none"> 1. DWR 	<ol style="list-style-type: none"> 1. Prior to construction and any on-site activities.

Mitigation Measure BIO-17: DWR shall have a qualified biologist conduct a pre-construction nesting season protocol survey for the coastal California gnatcatcher within the selected alternative to determine and map the location and extent of nesting coastal California gnatcatcher occurrence(s) within the construction right-of-way.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. Prior to construction, DWR shall contract a qualified biologist to conduct the required protocol nesting season survey and map locations and occurrences for the coastal California gnatcatcher. 2. DWR shall submit survey results to CDFG and USFWS. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 	<ol style="list-style-type: none"> 1. DWR 	<ol style="list-style-type: none"> 1. Prior to construction

Mitigation Measure BIO-18: DWR shall have a qualified biologist conduct a pre-construction spring/summer active season general reconnaissance for nesting/roosting special-status mobile bird and bat species, and other nesting birds within the selected alternative alignment to determine and map the location and extent of special-status species occurrence(s).

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. Prior to construction, a qualified biologist shall conduct the required survey and map locations and occurrences for species observed. 2. DWR shall submit survey results to CDFG and USFWS. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 	<ol style="list-style-type: none"> 1. DWR 	<ol style="list-style-type: none"> 1. Prior to construction

Mitigation Measure BIO-19: DWR shall avoid direct impacts on nesting coastal California gnatcatchers and any nesting birds located within the construction right of way. This could be accomplished by establishing the construction right of way and removal of plant material outside of the typical breeding bird season (February 1 through August 31).

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. Prior to construction, DWR shall contract a qualified biologist to clearly delineate the construction right-of-way (stake, flag, fence, etc.) that limits impacts to the coastal California gnatcatcher. 2. DWR shall submit survey results to CDFG and USFWS. 3. DWR will remove plant material outside of the typical range of this species during the non-breeding season. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 	1. DWR	<ol style="list-style-type: none"> 1. Prior to construction 2. Prior to construction 3. From October 1 through January 31

Mitigation Measure BIO-20: If construction and vegetation removal is proposed for the bird nesting period February 1 through August 31, then active nest sites located during the pre-construction surveys shall be avoided and a non-disturbance buffer zone established dependent on the species and as approved by the USFWS and CDFG. Nest sites shall be avoided with approved non-disturbance buffer zones until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. Forward efforts and results of nest locations to USFWS and CDFG for compliance. 2. Prior to construction and vegetation removal, a qualified biologist will clearly delineate a non-disturbance buffer zone (USFWS and CDFG approved.) around any active coastal California Gnatcatcher nests. 3. Nest sites shall be avoided until directed otherwise by a qualified biologist. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 	1. DWR	<ol style="list-style-type: none"> 1. Prior to construction 2. Prior to construction 3. During Construction period of February 1 through August 31, and during any on-site activities.

Mitigation Measure BIO-21: If a natal bat roost site is located during pre-construction surveys, it shall be avoided with non-disturbance buffer zone established by a qualified biologist until the site is abandoned.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. Prior to construction and vegetation removal, DWR shall contract a qualified biologist to clearly delineate a non-disturbance buffer around any natal bat roost sites. 2. DWR shall submit survey results to CDFG and USFWS. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 	<ol style="list-style-type: none"> 1. DWR 	<ol style="list-style-type: none"> 1. Prior to construction

Mitigation Measure BIO-22: DWR shall minimize impacts on documented locations of nesting coastal California gnatcatchers and any nesting birds by reducing the construction right-of-way through areas of known occurrences.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. Prior to construction, and during construction and on-site activities, a qualified biologist and DWR will clearly delineate paths for reduction in the construction right-of-way (as deemed necessary) that will limit impacts to the coastal California gnatcatcher and other nesting birds. 2. DWR shall submit survey results to CDFG and USFWS. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 	<ol style="list-style-type: none"> 1. DWR 	<ol style="list-style-type: none"> 1. Prior to construction, during construction and any on-site related activities

Mitigation Measure BIO-23: DWR shall stake, flag, fence, or otherwise clearly delineate the construction right-of-way that restricts the limits of construction to the minimum necessary to implement the project that also minimize impacts on special-status bird and bat species, and RAFSS habitat.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. Prior to construction and under the direction of a qualified biologist, DWR shall clearly delineate the construction right-of-way (stake, flag, fence, etc.) that limits impacts to special-status wildlife species and RAFSS habitat. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 	<ol style="list-style-type: none"> 1. DWR 	<ol style="list-style-type: none"> 1. Prior to construction 2. During construction and any on-site activities

Mitigation Measure BIO-24: DWR shall prepare and implement a special-status bird and bat species and RAFSS habitat restoration plan, approved by the USFWS for unavoidable temporary impacts on special-status bird and bat species and RAFSS habitat as a part of that specified for special-status plants and ground dwelling wildlife in mitigation measures **BIO-5** and **BIO-15**. The plan shall include the results of the pre-construction surveys that documents the location and extent of nesting/roosting special-status bird and bat species and quantifies the temporary and permanent impacts based on acres of occupied habitat, and/or other means to clearly articulate the unavoidable impacts. Compensatory

mitigation for the coastal California gnatcatcher can be satisfied under the same habitat restoration and enhancement measures and acquisition/conservation credit program described under Mitigation Measures **BIO-6** as approved by USFWS and compatible for both the impacted plant and wildlife species and RAFSS habitat.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. Prior to construction, DWR shall have a qualified biologist prepare a special-status bird and bat species and RAFSS habitat restoration maintenance and monitoring plan as a part of that specified in BIO 5 and BIO 16. 2. DWR shall implement the special-status bird and bat species and RAFSS habitat restoration plan prior to construction and submit to USFWS and CDFG following project completion. 3. Prior to construction, DWR shall purchase compensatory mitigation lands or credits at a USFWS or CDFG approved conservation bank at a minimum 2:1 ratio (or that required by the USFWS and CDFG permit conditions) for the preservation in perpetuity and dedication in deed restriction, conservation easement, or some other suitable land conservation instrument over RAFSS habitat with known occurrences of coastal California gnatcatcher (this compensatory mitigation can be satisfied under the same habitat acquisition/conservation credit program under Mitigation Measure BIO 6 as approved by USFWS and compatible for both the impacted plant and wildlife species and RAFSS habitat). 4. DWR will submit a purchase compliance to CDFG and USFWS. 	<ol style="list-style-type: none"> 1. DWR shall submit scheduled status reports, as designated in the maintenance and monitoring plan, to CDFG regarding special-status bird and bat species/RAFSS habitat status and habitat restoration fulfillment. 2. DWR shall obtain confirmation of receipt of purchase compliance from CDFG and USFWS prior to any on-site activities. 	1. DWR	1. Prior to construction

Mitigation Measure BIO-25: During initial Santa Ana River diversion and dewatering, a qualified biologist shall be onsite to capture and relocate any Santa Ana speckled dace or other fish species that may be within the dewatered construction area. The relocation site selected by the biologist shall have similar habitat characteristics as the construction site prior to dewatering.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. During initial Santa Ana River diversion and dewatering, DWR shall contract a qualified biologist to be onsite to capture and relocate any Santa Ana speckled dace or other fish species that may be within 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 	1. DWR	1. During construction

the dewatered construction area.

Wildlife Movement Corridors: The proposed project would have a less-than-significant impact on wildlife movement corridors with implementation of mitigation measures.

Mitigation Measure BIO-26: The active Santa Ana River channel shall be restored to pre-construction width, contours, and gradient following construction to insure that no barriers to the free upstream and downstream movement of aquatic life occur after construction.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction, DWR will consult a qualified biologist document compliance with the following: <ul style="list-style-type: none"> Restoration of the Santa Ana River channel and other waters of the U.S. to original contours, width, and gradients. Establish a re-vegetation program to restore all disturbed habitat and ensure that there are no barrier to the upstream and downstream movement of aquatic life. 	1. DWR shall notify contractors of this requirement during contract negotiations. All personnel shall be notified by the construction foreman of this requirement and any areas to avoid. 2. DWR shall submit a report documenting restoration efforts to Corps, CDFG, and USFWS for approval.	1. DWR	1. Prior to and after construction

Local Policies, Ordinances, and Habitat Conservation Plans: The project would be consistent with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, with implementation of mitigation measures. Also the project would be consistent with the provisions of adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan with implementation of mitigation measures.

Mitigation Measures: Implement BIO-1 through BIO-6.

Cultural Resources

Archeological Resources: Construction of proposed facilities would have a less-than-significant impact on known or unknown cultural resources with mitigation.

Mitigation Measure CR-1: Once an alternative alignment has been selected, known archaeological sites along that alternative alignment will be evaluated further by a qualified archaeologist to determine their potential significance. The qualified archaeologist shall prepare a report evaluating each known archaeological site and noting whether the site could be significant. The report will determine whether additional

evaluation would be required prior to the destruction of each site. DWR shall consult with the SHPO to determine the eligibility of resources as historic properties, and the effect of the proposed project on identified historic properties. DWR shall implement additional data recovery if requested by SHPO.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. DWR shall retain a qualified professional to conduct the survey.	1. The survey report shall include a map of resource sites and identify any significant resources that warrant protection.	1. DWR	1. Prior to construction
2. The survey results shall be sent to SHPO.	2. The report shall be used to design the construction corridor and identify areas that require avoidance, if necessary.		

Mitigation Measure CR-2: DWR shall narrow the construction zone to avoid known archaeological resources where feasible. If appropriate, prior to construction, a qualified archaeologist shall mark exclusion zones around known archaeological sites that can be avoided to ensure they are not impacted by construction.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. The avoidance area(s), if applicable, shall be marked on the construction drawings.	1. DWR shall notify construction workers of the avoidance areas and shall require the construction workers to avoid the area.	1. DWR and Construction Contractor	1. Prior to and during construction
2. The avoidance areas shall be verified prior to ground disturbance activities.	2. DWR shall ensure that the avoidance fencing is functionally installed during construction activities.		

Mitigation Measure CR-3: In the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and DWR shall consult with a qualified archaeologist to assess the significance of the find. If any find is determined to be significant, representatives of DWR and the qualified archaeologist would meet to determine the appropriate course of action. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. DWR shall retain a qualified professional in the event that any subsurface cultural resources are discovered. 2. All significant cultural material will be analyzed and a report will be prepared. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. The construction foreman shall have available, at all times, contact information for a qualified paleontologist in the event of unexpected discovery. 	<ol style="list-style-type: none"> 1. DWR and Construction Contractor 	<ol style="list-style-type: none"> 1. During construction

Historical Resources: Construction of proposed facilities would have a less-than-significant impact on historical resources with mitigation.

Mitigation Measure CR-4: DWR shall avoid impacting existing buildings within the former Lockheed Propulsion Company property.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. All former Lockheed Propulsion Company buildings shall be identified on construction drawings. 2. Any buildings located in a proposed pipeline route shall be avoided. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. Truck drivers shall be notified by the construction foreman of this requirement. 2. DWR shall ensure that the pipeline excavation avoids the buildings. 	<ol style="list-style-type: none"> 1. DWR and Construction Contractor 	<ol style="list-style-type: none"> 1. Prior to and during construction

Native American Resources: Construction of proposed facilities would have a less-than-significant impact on unknown buried cultural resources with mitigation.

Mitigation Measures CR-5: If human remains are discovered during construction activities, no further disturbance to the site shall occur until the County Coroner is notified. If the coroner determines the remains to be Native American, the coroner shall notify the Native American Heritage Commission within 24 hours. The Native American Heritage Commission shall identify the person or persons it believes to be the Most Likely Descended of the deceased. Under the amended 5097.98, the Most Likely Descended is required to make recommendations for treatment of any remains. Department of Water Resources shall cease construction activities at the discovery site until the remains have been removed and the site cleared by Native American Heritage Commission and the County Coroner.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
<ol style="list-style-type: none"> 1. Mitigation Measure CR-2 shall be noted on construction drawings. 	<ol style="list-style-type: none"> 1. DWR shall notify contractors of this requirement during contract negotiations. The construction foreman shall have available, at all times, contact information for the County Coroner in the event of unexpected discovery. 	<ol style="list-style-type: none"> 1. DWR 	<ol style="list-style-type: none"> 1. During construction

Paleontological Resources: Construction of proposed facilities would have a less-than-significant impact on paleontological resources with mitigation.

Mitigation Measure CR-6: In the event of an accidental discovery of fossil resources, work in the immediate vicinity of the find shall cease until a qualified paleontologist has determined the appropriate treatment of the find in accordance with Society of Vertebrate Paleontology Guidelines.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Mitigation Measure CR-2 shall be noted on construction drawings.	1. DWR shall notify contractors of this requirement during contract negotiations. The construction foreman shall have available, at all times, contact information for a qualified paleontologist in the event of unexpected discovery.	1. DWR	1. During construction

Geology, Soils, Seismicity, and Mineral Resources

Soil Erosion and Loss of Topsoil: The proposed project would result in a less-than-significant impact on soil erosion.

Mitigation Measure: Implement HYDRO-1.

Soil Suitability for Septic System: The proposed project would require site specific septic system design.

Mitigation Measure GEO-1: A percolation test shall be conducted at the location of the proposed septic system. The results of the percolation test shall be used to design a functional septic system for the Citrus Pump Station. The design of the system shall meet the standards established by San Bernardino County Division of Environmental Health Services.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. DWR shall obtain a soil percolation test from a qualified professional, the results of the test shall guide the design of the septic system.	1. DWR shall ensure the recommendations of the percolation test are implemented during construction and that the County design standards are followed.	1. DWR	1. Prior to and during construction

Hazards and Hazardous Materials

Soil or Groundwater Contamination During Excavation: The project would have a less-than-significant impact contaminating soil or groundwater during excavation with mitigation.

Mitigation Measure HA-1: DWR shall collect soil samples within the pipeline right-of-way west of Crafton Avenue to the Mill Creek levee and within the citrus orchard. The samples shall be analyzed for VOCs, organophosphate pesticides, and dibromochloropropane. The number of samples and sampling intervals shall be sufficient to accurately assess the soil quality along the pipeline corridors. If concentrations of target analytes are detected at concentrations considered to be a potential health threat, the County and the SARWQCB shall be notified and impacted soil shall be removed or remediated in accordance with applicable state or county requirements.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Once the preferred alignment is selected, a qualified professional shall evaluate the route and determine to location and quantity of soil samples to be taken.	1. Prior to construction, the sampling reports shall be analyzed.	1. DWR and qualified soil professional	1. Prior to and during construction
2. The results of the soil samples shall be reported to the RWQCB and County if contaminated are found to be above MCL.	2. If contaminated soil cannot be avoided, the excavated material shall be processed in accordance with state and county requirements.		

Mitigation Measure HA-2: DWR shall incorporate into contract specifications the requirement that, in the event that evidence of potential soil contamination, including soil discoloration, noxious odors, debris, or buried storage containers are encountered during construction, the contractor(s) will have available, a qualified environmental consulting firm to perform sampling and analysis of potentially hazardous substances and coordinate with the appropriate regulatory agencies, if necessary. The required handling, storage and disposal methods shall depend on the types and concentrations of chemicals identified in the soil. Any site investigations or remediation shall comply with applicable laws.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include HA-2 in the construction contract specification.	1. The construction foreman shall have available, at all times, contact information for a qualified environmental consulting firm in the event of hazardous material discovery.	1. DWR and qualified environmental professional	1. During construction

Mitigation Measure HA-3: If underground storage tanks (USTs) are discovered during construction, the UST, associated piping, and impacted soil shall be removed by a licensed and experienced UST removal contractor. The UST and contaminated soil shall be removed in compliance with applicable county and state requirements.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include HA-3 on the construction drawings.	1. The construction foreman shall have available, at all times, contact information for a qualified environmental consultant and or UST removal contractor in the event of discovery.	1. DWR and qualified environmental professional	1. During construction

Mitigation Measures HA-4: Groundwater generated by dewatering shall be disposed of or discharged in accordance with relevant rules and regulations. Discharge of groundwater to the sewer system or off-site disposal shall comply with applicable county and state discharge regulations.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include measure HA-4 in the construction contract specification.	1. The conditions of the dewatering permit shall be implemented on site.	1. DWR and Construction Contractor	1. During construction
2. Obtain a dewatering permit from the RWQCB.			

Well Contamination: The proposed project would have a less-than-significant impact on well contamination with mitigation.

Mitigation Measures HA-5: Prior to the commencement of excavations, DWR shall conduct a comprehensive well survey to locate, identify, and confirm all existing groundwater wells within the construction zone. Information for well locations shall be obtained, if available, from DWR, San Bernardino County Environmental Health Services, RWQCB, and the former property owners. Groundwater wells, including monitoring wells, shall be properly destroyed and removed in accordance with DWR Well Standards. Replacement wells shall be constructed by DWR if requested by owners of wells destroyed by the project.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include HA-5 in the construction contract specification.	1. The well survey findings shall be provided to all entities that provided well location information.	1. DWR and Construction Contractor	1. Prior to and during construction
2. Communicate with all entities that may have knowledge of well locations.	2. Wells proposed for decommission shall be identified on the survey findings.		
3. Conduct the well location survey.	3. DWR shall approve of the well decommission procedures.		
4. Identify all wells on the construction drawings.			

Hazardous Materials Used During Construction: Materials used during the construction of the project will have a less-than-significant impact on the surrounding environment with mitigation.

Mitigation Measure HA-6: Consistent with Storm Water Pollution Prevention Plan (SWPPP) requirements identified in the Hydrology and Water Quality section of this document, DWR shall require the contractor to implement best management practices (BMPs) for handling hazardous materials on the construction site. BMPs will include the following:

- Follow manufacturers' recommendations and regulatory requirements for use, storage, and disposal of chemical products and hazardous materials used in construction;
- During routine maintenance of construction equipment, properly contain and remove grease and oils;
- Properly dispose of discarded containers of fuels and other chemicals; and
- Provide secondary containment at designated fueling locations.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include preparation and implementation of a SWPPP, as required by state law and discussed in section 3.7 of this EIR.	1. Keep SWPPP in the project file and at the work site. 2. Perform site inspections to verify contractor compliance. Retain inspection records in the project file.	1. DWR and the Construction Contractor	1. Prior to construction 2. During construction

Use of Hazardous Materials During Operation of Facilities: The proposed project would have a less-than-significant impact on the surrounding environment during operation of the facilities with mitigation.

Mitigation Measures HA-7: For facilities within 1,500 feet of the Santa Ana River channel and within the Woollystar Preservation Area, weed abatement will be conducted manually. No herbicides will be used in these areas.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. DWR shall ensure that project maintenance and operations personnel are aware of these requirements.	1. The proposed Crafton Hills Pump station office shall post a map that identifies the areas where manual weed abatement would be required	1. DWR	1. Post construction

Mitigation Measures HA-8: DWR will ensure that herbicides are stored and applied according to manufacture specifications and in compliance with DWR's Division of Operations and Maintenance standard practices.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. DWR shall ensure that project maintenance and operations personnel are aware of these requirements.	1. DWR shall provide proper storage facilities and shall ensure that application techniques follow manufactures specifications.	1. DWR	1. Post construction

Hazardous Material Sites: The proposed project would be located near a hazardous material site.

Mitigation Measure: Implement Mitigation Measures HA-1 through HA-4.

Hazardous Material Use Near Schools: Portions of the proposed pipeline and reservoir would be located within a quarter mile of a high school.

Mitigation Measure: Implement Mitigation Measure HA-8.

Grassland and Wildland Fires: The proposed project would have a less-than-significant impact related to grassland or wildland fire hazards with mitigation.

Mitigation Measures HA-9: During construction, all staging areas, welding areas, or areas slated for development using spark-producing equipment will be cleared of dried vegetation or other material that could ignite. Any construction equipment that includes a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the proposed project, DWR shall require all vehicles and crews working at the project site to have access to functional fire extinguishers at all times. In addition, construction crews are required to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. DWR shall prepare a Fire Safety Plan.	1. Construction workers shall be briefed on the various action plan scenarios in the event of a fire.	1. DWR	1. Prior to and during construction

Airport Hazards: The proposed project would have less-than-significant impacts related to Airport safety hazards.

Mitigation Measure: Implement LU-7.

Emergency Response Plans: The proposed project would not conflict with the implementation of an emergency response plan or interfere with an evacuation route.

Mitigation Measure: Implement TR-3.

Hydrology and Water Quality

Water Quality: The proposed project would have a less-than-significant impact on local water quality with implementation of mitigation measures.

Mitigation Measures HYDRO-1: The required SWPPP shall at the least, include BMPs that facilitate site control, housekeeping, and site restoration components. The BMP's should be similar to those described in the California Storm Water Quality Association Storm Water Best Management Practice Handbook. At a minimum the following BMPs should be implemented:

- Stockpiled soils shall be controlled to prevent erosion from wind and runoff. Control measures may include covering, silt fences, straw bales, or construction of earthen swales.
- Vehicle and equipment fueling, equipment and fuel storage, and concrete wash activities shall be performed in controlled areas a minimum of 1,000 feet from surface water features with secondary containment and spill prevention equipment.
- Street sweeping shall be conducted on surface streets affected by construction and at construction site entrances and exits including during periods of soil hauling as necessary to prevent tracking soil onto streets.
- No vehicle or equipment wash water, including concrete wash water, will be allowed to run off the site. Controls will be implemented to detain wash water and remove waste from the site for appropriate disposal.
- No equipment shall be re-fueled within 1,000 feet of the main channel of the Santa Ana River.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prepare a SWPPP.	1. Keep SWPPP in the project file and at the work site.	1. DWR and the construction contractor	1. Prior to and during construction
2. Obtain an approved SWPPP.	2. Perform site inspections to verify contractor compliance. Retain inspection records in the project file.		

Mitigation Measure HYDRO-2: DWR shall adopt the following measures for surface water diversion:

- Construction within the Santa Ana River channel requiring diversion of Santa Ana River water will occur in the non-rainy months (May-September).

- DWR shall coordinate with the USACE regarding releases from Seven Oaks Dam to minimize flow during the stream crossing construction.
- The active streambed shall be returned to its pre-construction width and elevation after the construction activities are complete.
- The diversion outfall location shall have velocity reduction features and armoring if necessary to prevent increased turbidity, scouring and erosion. These features should be designed similar to BMPs EC-10 and NS-5 described in California Stormwater Quality Association Stormwater Best Management Practice Handbook (January 2003). Sediment basins shall be used if necessary to minimize turbidity during diversions.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include HYDRO-2 in the construction contract specification.	1. Perform site inspections to verify contractor compliance.	1. DWR and the construction contractor	1. Prior to and during construction
2. Includes these measures on the construction drawings.	2. Retain inspection records in the project file.		

Mitigation Measure HYDRO-3: DWR shall require the excavation contractor to prepare a dewatering and diversion management plan outlining the dewatering system design, diversion system design, operation schedule, permit conditions of approval, and monitoring requirements. DWR shall review and approve the plan prior to its implementation.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include HYDRO-3 in the construction contract specification.	1. Perform site inspections to verify contractor compliance.	1. DWR and the construction contractor	1. Prior to and during construction
2. The plan shall be provided to DWR prior to construction for approval.	2. Retain inspection records in the project file.		

Drainage and Flooding: The proposed project would have a less-than-significant impact on flooding and the flood plain with implementation of mitigation measures.

Mitigation Measure HYDRO-4: DWR shall design the Santa Ana River crossing to prevent eventual exposure by riverbed scouring. The pipeline shall be placed approximately 20 feet below possible scour depths and shall be encased in concrete under the active channel.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include HYDRO-4 in the construction contract specification.	1. Perform site inspections to verify contractor compliance.	1. DWR and the construction contractor	1. Prior to and during construction
2. These requirements shall be detailed on the construction drawings.	2. Retain inspection records in the project file.		

Mitigation Measure HYDRO-5: DWR shall request notification by USACE or SBCFCD of future riverbed modifications in the segment of the Santa Ana River from the East Branch Extension crossing to Plunge Creek. Riverbed modifications of concern include the removal and replacement of slope protection structures and riverbed armoring layers.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. DWR shall notify to USACE and SBCFCD of their desire to be made aware of construction projects in the area.	1. DWR shall watch for nearby project notices and respond accordingly.	1. DWR	1. Post construction

Land Use, Planning, and Recreation

Consistency with Land Use Plans: The proposed project would be consistent with local land use plans, policies, regulations, and zoning ordinances with implementation of mitigation measures.

Mitigation Measure LU-1: The permanent easement through the WSPA shall not allow vehicle traffic. No permanent roads shall be constructed through the WSPA.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. No paved area shall be constructed along the easement through the WSPA.	1. Operation and maintenance of the pipeline shall be done without vehicular traffic to reduce impact to the WSPA.	1. DWR	1. Post construction

Mitigation Measure LU-2: Flood control facilities, water conservation facilities including percolation ponds, roadways and private yards and driveways, will be returned to their original condition following installation of the pipeline.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Pre-construction photos and descriptions shall be made of areas to be affected by construction.	1. Pictures and descriptions of the remediation work shall be prepared to document the repair work.	1. DWR	1. Pre and post construction
2. The areas affected will be returned to their pre-construction condition.			

Effects on Airport Operations: The proposed project would have a less-than-significant impact on airport operations with implementation of mitigation measures.

Mitigation Measure LU-3: DWR shall either move the alternative alignment eastward of the planned runway extension, or include an encasement structure in the design of the project within the path of the proposed runway that would allow for a runway to be constructed over the pipeline in the future. The encasement structure would also provide necessary maintenance access.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include LU-3 in the construction contract specification.	1. DWR shall perform site visits during the construction of the pipeline encasement to confirm proper construction.	1. DWR	1. Pre and during construction
2. DWR shall ensure the concrete encasement is adequately engineered to support the runway load.			

Mitigation Measures LU-4: Prior to final design, DWR will submit its proposed project plans to the Airport Land Use Commission for review and comment.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prior to construction, construction plans will be submitted to the Airport Land Use Commission for review.	1. Comments received shall be considered by DWR and implemented if feasible.	1. DWR	1. Pre construction

Mitigation Measure LU-5: Prior to conducting construction activities within the Airport Influence Area, DWR shall prepare an airport construction safety plan that identifies best management practices for use within each Zone identified in the Airport Land Use Compatibility Plan. For proposed construction within the Runway Protection Zone (Zone A), the Plan shall include, at a minimum, construction timeframes and hours, lighting and flagging requirements, air traffic control communication requirements, access and egress restrictions, equipment staging area requirements, personal safety equipment requirements for construction workers, and appropriate notification to aviators. The plan will be approved by the City of Redlands.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include measure LU-5 in the construction contract specification.	1. Comments received from the city and airport shall be considered by DWR and implemented if feasible.	1. DWR and the construction contractor	1. Prior to and during construction
2. These requirements shall be detailed on the construction drawings.	2. Safety requirements that are applicable to construction workers shall be posted in a visible location on the construction site.		
3. The City of Redlands and Airport Land Use Commission shall review the plan prior to implementation.			

Mitigation Measure LU-6: Prior to final design, DWR shall identify the ground elevation associated with each project component and submit its project plans to airport staff for review and comment. DWR shall submit its design plans for airspace analysis (FAA Part 7460-l review) to determine whether any of the proposed project components will protrude into protected airspace. If such objects are identified, DWR, airport staff, and FAA will identify appropriate steps to adjust project plans or include appropriate markings to identify hazards to aviators pursuant to FAA Part 7460-l.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include LU-6 in the construction contract specification.	1. Comments received from the airport shall be considered by DWR and implemented if feasible.	1. DWR and the construction contractor	1. Prior to and during construction
2. The final plans shall be submitted to the Airport Land Use Commission for review and comment.	2. FAA comments on the airspace analysis shall be implemented.		
3. The final project plans shall be submitted to FAA for an airspace analysis.			

Effects on Aviation and Wildlife Hazards: The proposed project would have a less-than-significant impact on the Airport Land Use Compatibility Plan including wildlife management plans with implementation of mitigation measures.

Mitigation Measure LU-7: DWR shall reduce the potential attraction of its proposed facilities to wildlife through project design features, and ongoing monitoring as described below:

- DWR shall incorporate wildlife deterrent design measures to minimize attracting wildlife. Measures could include installation of a wire grid over the proposed reservoir as well as other mechanical means of deterring avian wildlife.
- DWR shall coordinate with the City of Redlands to develop a Wildlife Hazard Management Plan for the Citrus Reservoir pursuant to FAA guidelines. At a minimum the Plan would include maintenance, monitoring, and reporting requirements.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include LU-7 in the construction contract specification. 2. Wildlife deterrent features shall be installed. 3. Develop a Wildlife Hazard Management Plan.	1. The monitoring and reporting plan in the Wildlife Hazard Management Plan shall be implemented. 2. DWR shall inspect the construction of the wildlife deterrent features to ensure proper installation.	1. DWR and the construction contractor	1. Prior, during, and post construction

Noise and Vibration

Noise Standards: Daytime construction would exceed noise standards.

Mitigation Measure N-1: DWR shall ensure that the construction contractor avoids noise sensitive hours as follows:

- Construction activities within unincorporated San Bernardino County shall be limited to between 7:00 a.m. and 7:00 p.m., Monday through Saturday, and not permitted Sundays and federal holidays.
- Construction activities within the City of Highland and City of Redlands shall be limited to between 7:00 a.m. and 6:00 p.m., Monday through Saturday, and not permitted Sundays and federal holidays except in the pipeline construction corridor adjacent to the Redlands Municipal Airport and within the active Santa Ana River channel.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include N-1 in the construction contract specification. 2. These standards shall be noted on the construction drawings.	1. DWR shall perform site visits during the construction to verify compliance.	1. DWR	1. During construction

Mitigation Measures N-2: DWR shall require construction contractors to minimize nuisance construction noise by implementing the following measures:

- Signs shall be posted at the construction sites that include permitted construction days and hours and a day and evening contact name and number for the job site.
- An onsite complaint and enforcement manager shall respond to and track complaints and questions related to noise.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include N-2 in the construction contract specification.	1. DWR shall perform site visits during the construction to verify compliance.	1. DWR	1. During construction
2. These standards shall be noted on the construction drawings.	2. DWR shall verify that noise complaints have been adequately addressed.		

Mitigation Measure N-3: DWR shall require construction contractors to minimize construction noise by implementing the following measures:

- During construction, the contractor shall outfit all equipment, fixed or mobile, with properly operating and maintained exhaust and intake mufflers, consistent with manufacturers' standards.
- Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used. External jackets on the tools themselves shall be used where feasible. Quieter procedures, such as use of drills rather than impact tools, shall be used whenever feasible.
- Stationary noise sources that could affect adjacent receptors shall be located as far from adjacent receptors as possible.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include N-3 in the construction contract specification.	1. DWR shall perform site visits during the construction to verify compliance.	1. DWR	1. During construction
2. These standards shall be noted on the construction drawings.			

Temporary Increase in Noise: Construction activities would result in periodic increases in the ambient noise level.

Mitigation Measures: Implement Mitigation Measures N-1, N-2, and N-3.

Vibration: Impacts would be less than significant with the implementation of mitigation measures.

Mitigation Measures N-4: DWR shall conduct a survey of buildings and infrastructure located within 50 feet of construction zones that will experience vibratory pile driving. The survey shall include photographs of foundations, walls, and hardscape areas to document their condition prior to construction. DWR shall return following the completion of the vibratory sheet-piling activities to inspect the condition of the structures. If damage is evident that is the result of vibration from construction activities, DWR shall provide appropriate compensation to remediate the damage.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Conduct pre-construction building surveys.	1. If damage is discovered, DWR shall adequately repair said damage.	1. DWR	1. Pre and post construction
2. Conduct post-construction building surveys.			

Public Services and Utilities

Local Services and Utility Systems: The proposed project would result in less-than-significant impacts to local services and utilities with implementation of mitigation measures.

Mitigation Measures PU-1: Prior to excavation, DWR shall locate overhead and underground utility lines, such as natural gas, electricity, sewage, telephone, fuel, and water lines, that may reasonably be expected to be encountered during excavation work.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include PU-1 in the construction contract specification.	1. The utility locations shall be considered when excavation occurs.	1. DWR	1. During construction
2. A map shall be prepared that identifies the known utility locations.			

Mitigation Measure PU-2: DWR shall confirm the specific location of all high priority utilities (i.e. pipelines carrying petroleum products, oxygen, chlorine, toxic or flammable gases; natural gas in pipelines greater than 6 inches in diameter, or with normal operating measures, greater than 60 pounds per square inch gauge; and underground electric supply lines, conductors, or cables that have a potential to ground more than 300 volts that do not have effectively grounded sheaths) and such locations will be highlighted on all constructions drawings. In the contract specifications, DWR will require that the contractor provide weekly updates on planned excavation for the upcoming week when construction will occur near a high priority utility.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include PU-2 in the construction contract specification.	1. DWR shall review the weekly updates of planned excavation activities.	1. DWR	1. During construction
2. These standards shall be noted on the construction drawings.			
3. Local service providers shall be contacted for information regarding potential high priority utilities.			

Mitigation Measure PU-3: DWR shall notify local fire departments any time damage to a gas utility results in a leak or suspected leak, or whenever damage to any utility results in a threat to public safety.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include PU-3 in the construction contract specification. 2. This standard shall be noted on the construction drawings.	1. The construction foreman shall have names and numbers of contact personnel at the Fire Department at the job site at all times.	1. DWR	1. During construction

Mitigation Measures PU-4: DWR shall contact utility owner if any damage occurs as a result of the project.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include PU-4 in the construction contract specification. 2. This standard shall be noted on the construction drawings.	1. The construction foreman shall have names and numbers of contact personnel of utility departments at the job site at all times.	1. DWR	1. During construction

Mitigation Measure PU-5: DWR shall coordinate final construction plans and specifications with affected utilities.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include PU-5 in the construction contract specification. 2. Final construction plans shall be provided to affected utilities.	1. DWR shall consider all utility department comments and implement them in the final plans as feasible.	1. DWR	1. During construction

Mitigation Measure PU-6: DWR shall provide a copy of the Traffic Control Plan to the County sheriff's department, local police departments, County fire department, and local fire departments for their review prior to construction. DWR shall provide 72-hour notice to the local service providers prior to construction of pipeline activities.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. The TCP shall be provided to the Sheriff, Police, and Fire Departments for review prior to construction.	1. DWR shall consider all Department comments and implement them in the final plans as feasible into the TCP.	1. DWR	1. Prior to construction
2. 72 hour construction notice shall be provided to local service providers			

Solid Waste: The proposed project would result in a less-than-significant impacts on local landfills with implementation of mitigation measures.

Mitigation Measures PU-7: DWR shall encourage project facility design and construction methods that produce less waste.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Material reuse and recycling options should be considered by DWR and the construction contractor.	1. To the extent feasible, material should be recycled.	1. DWR	1. During construction
	2. DWR shall site inspect to ensure that waste materials are being recycled, where possible, as apposed to sending to landfills.		

Mitigation Measure PU-8: DWR shall include in its construction specifications a requirement for the contractor to describe plans for recovering, reusing, and recycling wastes produced through construction, demolition, and excavation activities.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include PU-8 in the construction contract specification.	1. To the extent feasible, material should be recycled.	1. DWR	1. During construction
	2. DWR shall site inspect to ensure that waste materials are being recycled, where possible, as apposed to sending to landfills.		

Transportation and Traffic

Construction Traffic: Construction activities for the proposed project would have a less-than-significant impact on roadway traffic with mitigation.

Mitigation Measure TR-1: DWR shall provide staging areas for excavated material generated during pipeline installation within the construction zone or at locations accessible by construction roads to minimize use of local roadways for hauling of excavated materials.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Staging areas shall be identified on construction drawings.	1. DWR shall site visit to ensure that identified stockpile areas are being used and haul trucks are avoiding local roads to the extent feasible.	1. DWR	1. During construction

Mitigation Measure TR-2: DWR shall obtain the necessary road encroachment permits prior to construction and would comply with the applicable conditions of approval. Road encroachment permits may be necessary for construction within the following roadways: Crafton Avenue, Madeira Avenue, Garnet Street, Cone Camp Road, and Opal Avenue.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Include TR-2 in the construction contract specification.	1. Permit conditions shall be implemented.	1. DWR	1. During construction
2. Prepare a Traffic Control Plan.	2. DWR shall site visit to ensure permit conditions are being implemented.		

Mitigation Measure TR-3: DWR shall require the contractor to prepare a Traffic Control Plan in accordance with professional engineering standards prior to construction within roadways. The Traffic Control Plan could include the following requirements:

- DWR shall maintain access for local land uses including residential driveways, commercial properties, and agricultural lands during construction activities.
- Emergency services access to local land uses would be maintained at all times for the duration of construction activities. Local emergency service providers would be informed of road closures and detours.
- DWR shall post advanced warning of construction activities to allow motorists to select alternative routes in advance.
- DWR shall arrange for a telephone resource to address public questions and complaints during project construction.
- DWR shall establish methods for accommodating the construction-generated parking demand.
- For roadways requiring full closures, DWR (and the construction contractor) shall develop circulation and detour plans to minimize impacts to local street circulation. This would include the use of signing to guide vehicles onto alternative roads around the construction zone.
- DWR shall ensure that the contractor does not allow trucks hauling excavated material to leave the project site at an interval faster than one truck every two minutes. This required spacing will reduce the anticipated less-than-significant project-generated roadway and intersection congestion.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prepare a Traffic Control Plan.	1. Implement all requirements of the plan. 2. DWR shall site visit to ensure permit conditions are being implemented.	1. DWR	1. Pre and during construction

Mitigation Measure TR-4: DWR shall require the contractor to prepare a Haul Route Plan that will include roadway safety measures, roadway maintenance, and signage requirements along roads used as haul routes. The safety measures shall include, but not be limited to, crossing guard funding for schools and recreational parks along the haul route. If the haul route using San Bernardino Avenue to Orange Street were selected, the safety measures shall include prohibition of on-street parking on the northeast corner of the San Bernardino Avenue / Orange Street intersection (to facilitate right turns by haul trucks from westbound San Bernardino Avenue to northbound Orange Street). The Plan shall be submitted to the County of San Bernardino, the City of Highland, and the City of Redlands (and the City of Highlands, as appropriate) for review.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Prepare a Haul Route Plan. 2. Submit to the County for review.	1. Implement all requirements of the plan. 2. DWR shall site visit to ensure permit conditions are being implemented.	1. DWR	1. Pre and during construction

Effects to Road Accessibility: Construction of the proposed new pipeline would have a less-than-significant impact on restricting access to public roads.

Mitigation Measures: Implement TR-2 and TR-3.

Effects on Parking: Construction activities for the proposed project would have a less-than-significant impact on the demand for parking.

Mitigation Measures: Implement TR-3.

Effects to Public Roadway Safety: Construction activities would have a less-than-significant impact traffic safety hazards for vehicles, bicyclists and pedestrians on public roadways.

Mitigation Measures: Implement TR-2 and TR-3.

Effects to Roadways: Construction activities would have a less-than-significant impact on haul routes and roads used by construction vehicles to access the project work sites with mitigation.

Mitigation Measure TR-5: DWR shall monitor and maintain roadway surfaces along haul routes for the duration of the hauling period and return roadways impacted by construction to a structural condition equal to that which existed prior to construction activity.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Conduct pre-construction roadway surveys. 2. Conduct post-construction roadway surveys.	1. If damage to the roadways occurs, DWR shall adequately repair said damage.	1. DWR	1. Pre and post construction

Cumulative Impacts

Cumulative Effects: The proposed project would have a significant and unavoidable cumulative impact on air quality, agriculture, and noise.

Mitigation Measure C-1: DWR shall contact the City of Redlands and San Bernardino County to determine if construction of the Redlands Municipal Airport, Garnet Street Bridge, or Opal Avenue Rehabilitation projects would occur at the same time and if the same routes had been identified as haul routes for other construction-related traffic. If construction of any of these projects would occur along the same haul routes identified by DWR at the same time, DWR shall coordinate with the City of Redlands and San Bernardino County to identify alternative haul routes that would minimize the cumulative effect to traffic.

IMPLEMENTATION PROCEDURE	MONITORING AND REPORTING ACTION	MONITORING RESPONSIBILITY	MONITORING SCHEDULE
1. Coordinate with City and County Planning and building departments.	1. Schedule haul routes along different roadways to reduce traffic congestion.	1. DWR	1. During construction

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CHAPTER 8

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CHAPTER 9

Acronyms

AB	Assembly Bill
AC	Advisory Circular
ACEC	Areas of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ADT	annual daily traffic
af	acre-foot
AFC	Application for Certification
afy	acre-feet per year
AG	Agriculture
AIA	Airport Influence Area
AIRFA	American Indian Religious Freedom Act
ALP	Airport Layout Plan
ALUC	Airport Land Use Commissions
ALUCP	Airport Land Use Compatibility Plan
amsl	above mean sea level
APE	Area of Potential Effect
AQMP	Air Quality Management Plan
AR	Agriculture
ASTs	aboveground storage tanks
ATC	Applied Technology Council
bgs	below ground surface
BLM	Bureau of Land Management
BMPs	best management practices
BO	Biological Opinion
CAA	Clean Air Act
Cal EPA	California Environmental Protection Agency
Cal OSHA	California Occupational Safety and Health Administration

Caltrans	California Department of Transportation
CARB	California Air Resources Board
CASQA	California Storm Water Quality Association
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CECLA	Comprehensive Environmental
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geologic Survey
CH ₄	methane
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CNPS	California Native Plant Society
CNPSEI	California Native Plant Society Electronic Inventory
CO ₂	carbon dioxide
CO ₂ /yr	CO ₂ per year
CO ₂ E	CO ₂ equivalents
CRHR	California Register of Historical Resources
CSC	California Species of Concern
CUPA	Certified Unified Program Agency
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CWA	Clean Water Act
cy	cubic yards
dB	decibels

dba	A-weighted decibels
DBCP	dibromochloropropane
DBCP	dibromochloropropane
DCE	dichloroethylene
DFG	Department of Fish and Game
DMM	Demand Management Measures
DoD	Department of Defense
DPM	diesel particulate matter
DSOD	Division of Safety of Dams
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EDR	Environmental Data Resources
EDU	equivalent dwelling units
EERI	Earthquake Engineering Research Institute
EIR	Environmental Impact Report
EMT	emergency medical technician
EOs	element occurrences
ESA	Endangered Species Act
EVWD	East Valley Water District
EWA	Environmental Water Account
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FCAA	Federal Clean Air Act
FCAAA	Federal Clean Air Act Amendments
FEMA	Federal Emergency Management Agency
FESA	federal Endangered Species Act
FHWA	Federal Highway Administration
FICON	Federal Interagency Committee on Noise
FIP	Federal Implementation Plan
FMMP	Farmland Mapping and Monitoring Program
FTA	Federal Transit Administration
FW	Floodway
FYs	fiscal years
GHG	greenhouse gas

GTE	General Telephone & Electric
GWP	Global Warming Potential
H ₂ O	water vapor
HCP	Habitat Conservation Plan
HFCs	hydrofluorocarbons
HWCL	Hazardous Waste Control Law
HWMPs	Hazardous Waste Management Plans
Hz	hertz
IBC	International Building Code
kV	kilovolt
LCFS	Low Carbon Fuel Standard
Ldn	Day-Night Noise Level
LEED	Leadership in Energy and Environmental Design
LESA	Land Evaluation and Site Assessment
LOS	Level of Service
LSM	less than significant with mitigation
M&I	municipal and industrial
MBTA	Federal Migratory Bird Treaty Act
MCL	Maximum Contaminate Level
mg/l	milligrams per liter
Mkwh	million kilowatt hour
MLD	Most Likely Descended
MMI	Modified Mercalli Intensity
MMRP	Mitigation Monitoring and Reporting Plan
MMTCO ₂ E	Million metric tons of CO ₂ E
MPO	metropolitan planning organization
Mw	maximum expected moment magnitude
MWD	Metropolitan Water District of Southern California
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act

NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NOT	Notice of Termination
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPIAS	National Plan of Integrated Airport Systems
NPL	National Priorities List
NRHP	National Register of Historic Places
O ₃	ozone
OCAP	Operating Criteria Plan
OHP	California Office of Historic Preservation
OS	Open Space
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbons
PCE	perchloroethylene
PCEq	passenger car equivalent
PFCs	perfluorocarbons
PM-10	Respirable Particulate Matter
PM-2.5	Fine Particulate Matter
PPV	peak particle velocity
PRC	Public Resources Code
PUC	Public Utilities Code
QA/QC	Quality Assurance/Quality Control
Qow	older wash deposits
Qw	Quaternary Wash
RAFSS	Riversidean alluvial fan sage scrub
RC	Resources conservation
RCPG	Regional Comprehensive Plan and Guide
RCRA	Resource Conservation and Recovery Act
RCTC	Riverside County Transportation Commission
REI	Redlands Municipal Airport
RMS	root mean square
RMUD	Redlands Municipal Utilities Department

ROG	reactive organic gases
ROWD	Report of Waste Discharge
RPW	Relatively Permanent Waters
RPZs	runway protection zones
RS	Single Residential
RSA	Regional Statistical Area
RTP	Regional Transportation Plan
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SAFS	San Andreas Fault System
SAFS	San Andreas Fault System
SANBAG	San Bernardino Associated Governments
SARWQCB	Santa Ana Regional Water Quality Control Board
SBBA	San Bernardino Basin Area
SBCFCD	San Bernardino County Flood Control District
SBCFCD	San Bernardino County Flood Control District
SBD	San Bernardino International Airport
SBD	San Bernardino International Airport
SBNF	San Bernardino National Forest
SBVMWD	San Bernardino Valley Municipal Water District
SBVWCD	San Bernardino Valley Water Conservation District
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCEC	Southern California Earthquake Center
SCGC	Southern California Gas Company
SEAOC	Structural Engineers Association of California
SF ₆	sulfur hexafluoride
SGPWA	San Geronimo Pass Water Agency
SHPO	State Historic Preservation Officer
SHOPP	State Highway Operation and Protection Program
SIP	State Implementation Plan

SOI	sphere of influence
SPCC	Spill Prevention, Control, and Countermeasure
SQG	small quantity generators
SR	State Route
SRAM	Short Range Attack Missile
SSC	Species of Special Concern
SU	significant and unavoidable
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TAPs	toxic air pollutants
TCE	trichloroethylene
TDS	total dissolved solids
THMs	tri-halomethanes
TMDL	Total Maximum Daily Load
TNW	Traditional Navigable Waters
TOC	total organic carbon
TSCA	Toxic Substances Control Act
UBC	Uniform Building Code
USACE	United States Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Department of Agriculture Forest Service
USFWS	United States Fish and Wildlife Service
USGBC	U.S. Green Building Council
USTs	underground storage tanks
UWMP	Urban Water Management Plan
Vdb	decibel notation
VOCs	volatile organic compounds
WDRs	Waste Discharge Requirements
WHMP	Wildlife Hazard Management Plan
WQMP	Water Quality Management Plan
WSPA	Woolly Star Preservation Area
ybp	years before present

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CHAPTER 10

References

- Altschul, J.H., R.R. Rose, and M. K. Lerch, 1984. *Man and Settlement in the Upper Santa Ana River Drainage: A Cultural Resources Overview*. Statistical Research Technical Series No. 1. On file with the San Bernardino Archaeological Information Center.
- Aspen Environmental Group, 2006. *Rare Plant Survey Report for the East Branch Extension Project, Phase II, San Bernardino County, California*. Aspen Environmental Group, Agoura Hills, California. Prepared for the Department of Water Resources, Unpublished Report.
- Association of Environmental Professionals (AEP), 2007. Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents. *Environmental Monitor*, Spring 2007: 4-11.
- Atwood, J.L., 1990. *Status review of the California Gnatcatcher (Polioptila californica)*. Manomet Bird Observatory, P.O. Box 1770, Manomet, MA 02345.
- Baumhoff, M.A., 1978. Environmental Background. In *California*, edited by R.F. Heizer, pp. 16-24. Handbook of North American Indians, Vol. 8, W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.
- Bean, L.J. and C.R. Smith, 1978. Serrano. In *California*, edited by R.F. Heizer, pp. 570-574. Handbook of North American Indians, Vol. 8, W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.
- Bean, L.J., 1978. Cahuilla. In *California*, edited by R.F. Heizer, pp. 575-587. Handbook of North American Indians, Vol. 8, W.C. Sturtevant, general editor. Smithsonian institution, Washington, D.C.
- Beaumont Basin Watermaster, 2006. *Third Annual Report of the Beaumont Basin Watermaster FY 2005-06*, December 2006.
- Bennyhoff, J.A., 1977. *Ethnogeography of the Plains Miwok*. Center for Archaeological Research at Davis: Number 5, University of California, Davis.
- Bleich, V.C., 1973. *Ecology of rodents at the United States Naval Weapons Station Seal Beach, Fallbrook Annex, San Diego County, California*. M.A. Thesis, California State University, Long Beach, 102 pp.

- Bolger, D.T., A.C. Alberts, R.M. Sauvajot, P. Potenza, C. McCalvin, D. Tran, S. Mazzoni, and M.E. Soul, 1997. *Responses of rodents to habitat fragmentation in coastal southern California*. *Ecological Applications* 7:552-563.
- Bolt, Bruce A., 1998. *Earthquakes*, W.H. Freeman and Company, New York, New York.
- Bontrager, D.R., 1991. *Habitat requirements, home range requirements, and breeding biology of the California Gnatcatcher (Poliophtila californica) in south Orange County, California*. Prepared for Santa Margarita Company, Ranch Santa Margarita, CA, April 1991.
- Bortugno, E.J. and T.E. Spittler, 1986. Geologic Map of the San Bernardino Quadrangle, California, 1:250,000. Regional Geologic Map Series, Map No. 3A.
- Bright, W. and E.G. Gudde, 2004. *California Place Names: The Origin and Etymology of Current Geographical Names*. University of California Press, Berkeley, California.
- California Air Resources Board (CARB), 2000. *Risk Reduction Plan for Diesel-Fueled Engines and Vehicles*. September 2000.
- California Air Resources Board (CARB), 2001. *ARB Fact Sheet: Air Pollution Sources, Effects and Control*. Available online: <http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm>, updated December 2005.
- California Air Resources Board (CARB), 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.
- California Air Resources Board (CARB), 2007a. *Ambient Air Quality Standards*. Available online: <http://www.arb.ca.gov/aqs/aaqs2.pdf>, accessed February 22, 2007.
- California Air Resources Board (CARB), 2007b. *Area Designation Maps*. Available online: <http://www.arb.ca.gov/desig/adm/adm.htm>, page updated June 28, 2007.
- California Air Resources Board (CARB), 2007c. *Draft List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration*. September 2007.
- California Air Resources Board (CARB), 2007d. *Mandatory Reporting of California greenhouse gas Emissions*. Presentation at Cal/EPA Headquarters, August 29, 2007.
- California Air Resources Board (CARB), 2007e. *Summaries of Air Quality Data, 2004, 2005, 2006*. Available online: <http://www.arb.ca.gov/adam/cgi-bin/db2www/polltrends.d2w/start>.
- California Climate Action Registry, 2007. *General Reporting Protocol Version 2.2*. March 2007.
- California Department of Conservation, 2007a. Division of Land Resource Protection, Farmland Mapping and Monitoring Program. Available online: <http://www.consrv.ca.gov/DLPR/fmmp/index.htm>, accessed July 9, 2007.

- California Department of Conservation, 2007b. Division of Land Resource Protection, Williamson Act Program. Available online: <http://www.consrv.ca.gov/DLPR/lca>, accessed July 24, 2007.
- California Department of Justice, 2007. San Bernardino County Settlement Agreement, Court Case No. CIVSS 700329, August 2007.
- California Department of Transportation (Caltrans), 1998. *Technical Noise Supplement*. Sacramento, California.
- California Department of Transportation (Caltrans), 2002a. *California Airport Land Use Planning Handbook*. Sacramento, California.
- California Department of Transportation (Caltrans), 2002b. *Transportation Related Earthborne Vibrations*. Sacramento, California.
- California Department of Transportation (Caltrans), 2004. *State Highway Operation and Protection Program* (pgs. 47-48, 52-54). Available online: <http://www.dot.ca.gov/hq/transprog/state/2004%20SHOPP%20Approved%204-8-2004.pdf>, accessed July 13, 2007.
- California Department of Transportation (Caltrans), 2006b. Division of Aeronautics General Information. Available online: <http://www.dot.ca.gov/hq/planning/aeronaut/htmlfile/index.php>, accessed August 7, 2006.
- California Department of Transportation (Caltrans), 2007. Division of Aeronautics. Meeting with ESA and DWR representatives to discuss proposed facilities near the Airport. September 12, 2007.
- California Department of Transportation (Caltrans), 2007a. *2006 Traffic Volumes on California State Highways*. Available online: www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm.
- California Department of Transportation (Caltrans), 2007b. *2006 Annual Average Daily Truck Traffic on California State Highways*. Available online: www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm.
- California Department of Transportation (Caltrans), 2007c. California Scenic Highway Mapping System. Available online: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm, accessed June 20, 2007.
- California Department of Water Resources (DWR), 2007d. *Draft The State Water Project Reliability Report*. December 2007.
- California Department of Water Resources (DWR), 2007e. *Monterey Amendment to the State Water Project Contracts (Including Kern Water Bank Transfer) and Associated Actions as Part of a Settlement Agreement*. October 2007.
- California Department of Water Resources (DWR), 2007f. *Amendment No. 17 to Water Supply Contract Between the State of California Department of Water Resources and San Geronio Pass Agency*. April 27, 2007. Available online: http://www.swpao.water.ca.gov/wsc/pdfs/SGPWA_O_C.pdf

- California Department of Water Resources (DWR) Division of Engineering, 2006. *California Aqueduct East Branch Extension – Phase II Citrus Reservoir Pre-Feasibility Geologic Report, San Bernardino County*. Project Geology Report No. 58-71-16, April 2006.
- California Energy Commission, 2005. *2005 California Energy Action Plan II*. Available online at http://www.energy.ca.gov/energy_action_plan/2005-09-21_EAP2_FINAL.PDF, September 21, 2005.
- California Geological Survey (CGS), 2003. *USGS/CGS PSHA Model*. Available online: <http://www.consrv.ca.gov/cgs/rghm/pshamap/pshamail.html>, revised and updated April 2003.
- California Geological Survey (CGS), 1997. *Guidelines for Evaluating the Hazard of Surface Fault Rupture*. CDMG Note 49, 1997.
- California Geological Survey (CGS), 1997b. *How Earthquakes Are Measured*. CDMG Note 32, available online: http://www.consrv.ca.gov/cgs/information/publications/cgs_notes/note_32/note_32.pdf, revised and updated April 2002.
- California Institute of Technology, Jet Propulsion Laboratory, 2008. History of Jet Propulsion Laboratory. Available online: www.jpl.nasa.gov.
- California Integrated Waste Management Board (CIWMB), 2007. Board Approved Diversion Rates for Jurisdictions in San Bernardino County. Available online: <http://www.ciwmb.ca.gov/Profiles/County/CoChart.asp?COID=36&Chartname=DRCOUNTY%2EASP>, accessed July 30, 2007.
- California Native Plant Society Electronic Inventory (CNPSEI), 2007. Inventory Record Search: Keller Peak, Harrison Mountain, Redlands, and Yucaipa, California, USGS 7.5-minute quadrangles.
- California Natural Diversity Database (CNDDB), 2007. Database Record Search: Keller Peak, Harrison Mountain, Redlands, and Yucaipa, California, USGS 7.5-minute quadrangles.
- California Stormwater Quality Association (CASQA), 2003. *Stormwater Best Management Practice Handbook, Construction*. Available online: <http://www.cabmphandbooks.com/Construction.asp>, accessed June 29, 2007.
- Carley, Rachel, 1994 *The Visual Dictionary of American Domestic Architecture*. New York, New York: Henry Holt and Company.
- Consulting Engineers and Land Surveyors of California (CELSOC), 2008. *California Environmental Quality Act, CEQA Guidelines*. Sacramento, California.
- Chambers Group Inc., 2007. Biological Technical Report, Department Of Water Resources, East Branch Extension Phase II Project, San Bernardino County, California.
- City of Banning, 2005. *City of Banning Draft General Plan EIR*. SCH No. 2005011039, May 2005.

- City of Beaumont, 2006. *Revised Draft EIR for the Beaumont 2006 General Plan Update*. SCH No. 2004061001, December 2006.
- City of Colton, 1987. *Final EIR for the City of Colton General Plan Update*. SCH No. 86051206, May 1987.
- City of Highland, 2005. *City of Highland General Plan and Development Code Update Draft EIR*. SCH No. 2005021046, September 2005.
- City of Highland, 2006. *Highland City General Plan*. Updated March 2006.
- City of Highland, 2006. Economic Development and Planning, Commercial Activity List, September 2006. Available online: <http://www.hIGHLAND-BUSINESS.ORG/development.htm>, accessed July 9, 2007.
- City of Highland official website, 2007. Available online: <http://www.ci.hIGHLAND.CA.US>, accessed June 2007.
- City of Loma Linda, 2004. *City of Loma Linda General Plan Final Program EIR*. SCH No. 2003101159, June 2004.
- City of Redlands, 1966. *Presenting: Redlands, California – General Information*. Third Edition, (On-file at A.K. Smiley Library.)
- City of Redlands, 1989. *General Plan, Public Health and Safety Element*.
- City of Redlands, 1993. *Redlands Municipal Airport Master Plan Update*. Prepared by Coffman and Associates for the City of Redlands.
- City of Redlands, 1995. *City of Redlands Master Environmental Assessment and Final EIR for 1995 General Plan*. SCH No. 91022067, October 1995.
- City of Redlands Community Development Department, 1997. *City of Redlands 1995 General Plan*. Adopted August 1995, amended December 1997.
- City of Redlands, 2005. *Airport Layout Plan for Redlands Airport*. Prepared by Associated Engineers, Inc., Ontario, California, December 22, 2005.
- City of Redlands, 2003. *Redlands Municipal Airport Land Use Compatibility Plan*. May 6, 2003.
- City of Redlands, 2006. Capital Improvement Program List. Available online: http://www.ci.redlands.ca.us/works/engin_capital.htm, accessed July 26, 2007.
- City of Redlands official website, 2007. Available online: <http://www.ci.redlands.ca.us>, accessed June 2007.
- City of Redlands, 2007. Status of Major Projects, July 6, 2007. Available online: <http://www.ci.redlands.ca.us/community/PDFs/StatusMajorProjects.pdf>, accessed July 26, 2007.

- City of Redlands, 1995. *City of Redlands General Plan – Section 3.0, City Design and Preservation Element*. Available online: <http://www.ci.redlands.ca.us>.
- City of Redlands, 2007. Title 18, Land Use Zoning Ordinance. Available online: <http://66.113.195.234/CA/Redlands/index.htm>, accessed July 9, 2007. Last update to City of Redlands, City Code on January 2, 2007.
- City of Redlands, 2008. Draft Joint Program/Project EIR for *Concept Plan No. 7 (Redlands Commons / Trojan Groves) and the Redlands Commons Development Plan*. January 2008.
- City of Rialto, 1992. *City of Rialto General Plan Update Final MEIR*. SCH No. 91022040, June 1992.
- City of San Bernardino, 2005. *San Bernardino General Plan Update and Associated Specific Plans EIR*. SCH No. 2004111132, September 2005.
- City of Yucaipa, 1992. *Final Program EIR for the Yucaipa General Plan*. SCH No. 92012079, August 1992.
- County of San Bernardino, 2006a. County of San Bernardino History. Available online: <http://www.co.san-bernardino.ca.us/history.htm>, accessed December 27, 2006.
- County of San Bernardino, 2006c. *Land Use Services Development Plan*. September 2006.
- County of San Bernardino, 2007. Seven Oaks Dam Website. Available online: <http://www.co.san-bernardino.ca.us/flood/damage.htm>, accessed August 8, 2007.
- Cunniff, Patrick, 1977. *Environmental Noise Pollution*. New York: John Wiley & Sons.
- Daly, Pamela, 2005. *Clear Air Force Station Ballistic Missile Early Warning System (BMEWS)*. EarthTech/U.S. Air Force. Interpretive brochure prepared for Clear Air Force Station, AK.
- Deinstadt, J.M., E.J. Pratt, F.G. Hoover, and S. Sasaki, 1990. *Survey of fish populations in southern California streams: 1987*. Calif. Dept. Fish and Game, Inland Fish. Div. Admin, Rpt. 90-1, 56p.
- Department of Defense, 1996. *Coming in from the Cold: Military Heritage in the Cold War*. Available online: <https://www.denix.osd.mil/denix/Public/ESPrograms/Conservation/ColdWar/coldwar.html>.
- Department of Water Resources (DWR), 1996. *Final Report on the Feasibility of Extending the California Aqueduct to the San Geronio Pass Water Agency*, January 1996.
- Department of Water Resources (DWR), 2003. *California's Groundwater*. Bulletin 118-Update 2003.
- Department of Water Resources (DWR), 2007. Levee Repair Website – History of Levees 2006. Available online: <http://www.levees.water.ca.gov/history/>, accessed on December 7, 2006.
- Dibblee, T.M., Jr., 2004a. Geologic Map of the Yucaipa Quadrangle Riverside County. Dibblee Geology Center Map #124.

- Dibblee, T.M., Jr., 2004b. Geologic Map of the Harrison Mountain/North ½ of Redlands Quadrangles San Bernardino and Riverside County, California. Dibblee Geology Center Map # 126.
- Dunk, J.R., 1995. White-tailed Kite (*Elanus leucurus*). In *The Birds of North America*, No. 178 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C.
- Elsasser, A.B., 1978. Development of Regional Prehistoric Cultures. In *California*, edited by R. F. Heizer, pp. 37-57. Handbook of North American Indians, Vol. 8, W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.
- Environmental Data Resources Inc. (EDR), 2007. *EDR DataMap Corridor Study, East Branch Extension, Mentone, CA 92359*. June 11, 2007.
- Erlich P.R., D.S. Dobkin, and D. Wheye, 1988. *The Birders Handbook: A Field Guide to the Natural History of North American Birds*. New York: Simon and Schuster.
- Federal Aviation Administration (FAA), 2007a. Advisory Circular 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*. August 28, 2007.
- Federal Aviation Administration (FAA), 2007b. Meeting of Los Angeles District Staff with representatives of the Department of Water Resources and ESA representatives. July 16, 2007.
- Freeberg, Larry. V.P. of Chambers Group, Inc. Interview conducted on May 16, 2007. Mr. Freeberg worked for Lockheed Propulsion at the Mentone site, as an engineer from 1964 to 1967.
- Gordon, H.J. and T.C. White, 1994. *Ecological guide to southern California chaparral plant series*. Technical Publication R5-ECOL-TP-005. USDA, Forest Service, Pacific Southwest Region, San Francisco, CA.
- Hanes, T.L., R.D. Friesen, and K. Keane, 1989. Alluvial Scrub Vegetation in Coastal Southern California. Pages 187-193 in *Proceedings of the California Riparian Systems Conference, September 22-24, 1988*. Davis, California. USDA Forest Service Gen. Tech. Rep. PSW-110.
- Hart, E.W., 1997. *Fault-Rupture Hazard Zones in California: Alquist-Priolo Earthquake Fault Zoning Act of 1972 with Index to Earthquake Fault Zones*. California Geological Survey, Special Publication 42, 1990, revised and updated 1997.
- Hickman, J.C. (ed.), 1993. *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley, California.
- Holcombe, Tom, 2007. Senior Operations/Water Quality Technician, San Bernardino Valley Municipal Water District, personal communication, July 27, 2007.
- Holland, R.F., 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Unpublished report available from the California Department of Fish and Game, Sacramento, California.

- Jennings, C.W., 1994. *Fault Activity Map of California and Adjacent Areas*. California Geological Survey, Data Map No. 6, 1:750,000.
- Katz, Okitsu & Associates, 2007. *Traffic Study for the Joint Program/Project EIR for Concept Plan No. 7 (Redlands Commons/Trojan Groves) and the Redlands Commons Development Plan for the City of Redlands*.
- Kelleher, Sean, 2007. Personal communication with Sean Kelleher, City of Highland, Planning Department, July 24, 2007.
- Kirkpatrick, J.B. and C.F. Hutchinson, 1977. *The Community Composition of California Coastal Sage Scrub*. Vegetation 25: 21-33.
- Kroeber, A.L., 1925. Handbook of the Indians of California. *Bureau of American Ethnology Bulletin* 78. Washington, D.C.
- Kyle, D.E., M.B. Hoover, H.E. Rensch, E.G. Rensch, and W.N. Abeloe, 2002. *Historic Spots in California*. Stanford University Press, Stanford, California.
- La Victoria, 2007. Available online: <http://www.lavictoria.com/en/default.asp>, accessed on March 22, 2007.
- Lackey, J.A., 1996. CHAETODIPUS FALLAX. *Mammalian Species* (517):1-6.
- Lienkaemper, J.J., P.A. McCrory, and D.P. Schwartz, 1996. *Probabilistic Seismic Hazard Assessment for the State of California*. California Geological Survey, Open File Report 96-706, available online: <http://www.consrv.ca.gov/CGS/rghm/psha/ofr9608/index.htm#Faults%20in%20California>.
- Los Angeles Times. ProQuest Historical Newspapers:
- Navy to Sponsor Jet Missile Show*, April 20, 1947.
 - Central Rocket Now California Corporation*, August 17, 1957.
 - U.S. Satellite Replica Being Tested in Area*, October 28, 1957.
 - Launching Date for Satellite Reported Near*, November 14, 1957.
 - Here Are Chief Facts on Vanguard Rocket*, December 5, 1957.
 - Man-Made Moon Being Built Nearby*, June 24, 1956.
 - Rocket Motor Test Kills Man, Injures Two*, December 28, 1960.
 - Two Men Die in Rocket Fuel Plant Explosion*, September 6, 1958.
 - Blast Rips Redlands Moon Rocket Plant*, July 8, 1956.
 - Blast Debris Yields Body of Engineer*, July 9, 1956.
 - Blast Rips Satellite Fuel Plant*, October 3, 1956.
 - Vanguard Launching Failure Taught Valuable Lesson*, February 1, 1958.
 - Caltech Scientists Praise Navy for Job Well Done*, March 18, 1958.

Grand Central Rocket Control to Petro-Tex, July 2, 1958.

Redlands Firm Wins Rocket Motor Order, June 28, 1959.

Rocket Fuel Firm to Start Big Expansion, October 13, 1959.

Anti-Missile Missile in First Successful Shot, October 15, 1959.

Lockheed to Buy 50% of Rocket Fuel Firm, February 3, 1960.

Solid Missile fuel Firm Claims Breakthrough, March 6, 1960.

L.A. Aircraft Plants in Changeover, April 24, 1960.

Rocket Testing Set at Ranch, May 16, 1960.

Rocket Engine Contracts Given, July 8, 1960.

Rocketry to Enter New Era Through Solid Propellants, July 18, 1960.

Southland Firms to Design Huge Solid-Fuel Rockets, October 20, 1960.

Missiles to Trigger Different Explosion, January 22, 1961.

Southland Views and News, October 5, 1961.

Glenn May Orbit Over Los Angeles, January 21, 1962.

5 Southland Firms Aided in 3-Orbit Flight, February 21, 1962.

Rocket Job Goes to Firm in California, May 10, 1962.

World's Largest Solid Rocket has Static Test, May 13, 1962.

Apollo Escape Rocket Fired Successfully, February 1, 1963.

The Big Push Now is for Push, August 18, 1963.

Lockheed Gets Rocket Contract, October 7, 1963.

Biggest Solid Fuel Rocket Motor Fired, May 29, 1964.

Model Moonship Boosted Into Orbit in Saturn Rocket's Seventh Success, September 19, 1964.

New Rocket Motor Fired Successfully, January 19, 1965.

California's Commanding Role in Project Apollo, February 12, 1967.

Awesome Apollo/Saturn Poised for First Flight, October 6, 1967.

Lockheed Propulsion Will Build, October 8, 1967.

All Major Apollo Parts Developed in California, October 13, 1968.

Moon Landing – A Tribute to State's Talent, February 12, 1971.

Lockheed Unit Wins Job for Rocket Motors, April 5, 1972.

Lockheed Unit Wins Rocket Motor Pact, July 12, 1973.

Lockheed said it plans to close its rocket motor facilities, December 5, 1974.

Lockheed Plans to Close Plant, January 17, 1975.

- McAlester, Virginia, and Lee, 1990. *A Field Guide to American Houses*. New York: Alfred A. Knopf.
- McClenaghan, Jr., L.R and E. Taylor, 1993. *Temporal and spatial demographic patterns in Dipodomys stephensi from Riverside County, California*. Journal of Mammalogy 74(3):636-645.
- Mentone Chamber of Commerce website, 2007. Available online: <http://www.mentonechamber.com/links.htm>, accessed June 2007.
- Mock, Patrick J., Barry L. Jones, Mary Grishaver, John Konecny, and David King D., 1990. Home range size and habitat preferences of the California Gnatcatcher in San Diego County. 108th Meeting of the American Ornithologists' Union, 60th Meeting on Cooper Ornithological Society, 95pp.
- Moore, Frank E., 1992. *The Saga of Norton Air Force Base*. Written for the archives of A.K. Smiley Public Library, Redlands.
- Moratto, M. J., 2004. *California Archaeology*. Coyote Press, Salinas, California. Reprinted from 1984, Academic Press, Orlando, Florida.
- Morton, D.M., F.K. Miller, P.M. Cossette, and K.R. Bovard. 2003. U.S. Geological Survey Open File Report 03-293, Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, Southern California.
- Moyle, P.B., R.M. Yoshiyama, J.E. Williams, and E.D. Wikramanayake, 1995. *Fish Species of Special Concern in California*. Second Edition. California Department of Fish and Game. Dept. of Wildlife & Fisheries Biology, Univ. Cal. Davis, California.
- Office of State Historic Preservation, 1986. *California Historic Resources Inventory, Survey Workbook* (excerpts). Sacramento, California.
- Office of State Historic Preservation, 1995. *Historic Properties Directory*. Sacramento, California.
- P&D Consultants (P&D), 1993. *San Geronio Pass Water Agency Water Importation Project Draft Environmental Impact Report (SCH# 92112068)*, November 1993.
- P&D Consultants (P&D), 1994. *San Geronio Pass Water Agency Water Importation Project Final Documents Approving the Final Environmental Impact Report (SCH# 92112068)*, April 1994.
- P&D Consultants (P&D), 1996. *San Geronio Pass Water Agency Water Importation Project Final Environmental Impact Report, Addendum 1 (SCH# 92112068)*, June 1996.
- P&D Consultants, Incorporated (P&D), 1997. *Supplemental Environmental Impact Report No. 1 for the East Branch Extension- Phase I (SCH# 92112068)*, November 1997.
- P&D Consultants (P & D), 2005. *Results of the Biological Resources Reconnaissance Survey for the East Branch Extension Phase II Project*. Orange, California. Prepared for the California Department of Water Resources, Unpublished Report.

- Pacific Coast Conservation Alliance, 2006. Sensitive Avian Surveys in Support of the California Department of Water Resources East Branch Extension Project Phase II.
- Parker, Patricia L., 1985. *Guidelines for Local Surveys: A Basis for Preservation Planning*. National Register Bulletin 24, Washington D.C.: U.S. Government Printing Office.
- Peterson, et.al, 1999. *Seismic Shaking Hazard Maps of California*. California Geological Survey.
- Preston K.L., P.J. Mock, M.A. Grishaver, E.A. Bailey, and D.F. King. 1998. *California territorial behavior*. Western Birds 29: 242-257.
- Quimby, Garfield M., 1975. *History of the Potrero Ranch and its Neighbors*. San Bernardino County Museum Association, Winter 1975, Vol. XXII, No. 2. (On file at the Apple Valley Library.)
- Redlands Chamber of Commerce, 1970. *Directory of Manufacturers and Citrus Industry for Redlands Area*. Redlands, CA. December 1970. (On-file at the A. K. Smiley Library.)
- Redlands Daily Facts Newspaper: (on-file at the A. K. Smiley Library, Redlands)
- Terms of Lease for New Industry Agreed Upon*, December 30, 1953.
- Will Employ 53 Technical Research Men*, December 22, 1953.
- Work to Start on New Factory in Two Weeks*, February 20, 1954.
- Rocket Co. Has Bright Future Lions Club Told*, July 17, 1954.
- Grand Central Rocket Co. New Name of Firm*, August 12, 1954.
- Remsen, J.V., 1978. *Bird species of special concern in California: An annotated list of declining or vulnerable bird species*. CDFG Wildlife Management Branch, Report No. 78-1.
- Riverside County, 2003. *General Plan Final Program EIR*, SCH No. 2002051143.
- Rodriguez, Joe, 2006. Personal communication with Joe Rodriguez, Federal Aviation Administration, August 7, 2006.
- Rogers, T.H., 1965. Geologic map of California, Santa Ana sheet, 1:250,000. California Division of Mines Map Series, Olaf P. Jenkins edition.
- Rojas, Sandra, 2007. Personal communication with Sandra Rojas, San Bernardino County Land Use Services Department, July 24, 2007.
- Romoff, Gary, 2007. Personal phone communication with Gary Romoff, Mentone Citrus Growers Ranch Manager, September 21, 2007.
- San Bernardino Associated Governments (SANBAG), 2001. *San Bernardino County Non-Motorized Transportation Plan 2001 Update*. Prepared by Alta Transportation Consulting, June 6, 2001.

- San Bernardino Associated Governments (SANBAG), 2003. *Congestion Management Program For San Bernardino County*, 2003 Updated, December 3, 2003.
- San Bernardino County, 2006. *Conservation Background Report*, February 1, 2006.
- San Bernardino County Regional Parks, 2007. Yucaipa Regional Park. Available online: <http://www.co.san-bernardino.ca.us/parks/yucaipa.htm>, accessed July 6, 2007.
- San Bernardino County Storm Water Program, 2005. Model Water Quality Management Plan Guidance.
- San Bernardino National Forest Service, 2007. Schedule of Proposed Actions, 1/2007-9/2007. Available online: <http://www.fs.fed.us/sopa/components/reports/sopa-110512-2007-07.html>, accessed July 15, 2007.
- San Bernardino Valley Water Conservation District (SBVWCD), 2007a. *Groundwater Levels, June 2007*. Available online: http://www.sbvwd.dst.ca.us/water_data/groundwater.shtml, accessed June 29, 2007.
- San Bernardino Valley Water Conservation District (SBVWCD), 2007b. Mission and History About the District. Available online: <http://www.sbvwd.dst.ca.us/about/index.shtml>, accessed July 2, 2007.
- San Bernardino Valley Municipal Water District (SBVMWD), 2007c. Santa Ana River Diversion Community Update Letter, page 6, updated January 2007. Available online: www.sbvwmwd.com/SAEIR-Final/SantaAnaRiverEIRFinal.htm, accessed March 7, 2007.
- San Bernardino Valley Municipal Water District (SBVMWD), 2007d. *Upper Santa Ana River Watershed Integrated Regional Water Management Plan*. November 2007.
- San Gorgonio Pass Water Agency (SGPWA), 2006. *2006 Report on Water Supply Conditions in the San Gorgonio Pass Region*. May 3, 2006.
- San Gorgonio Pass Water Agency (SGPWA), 2007. *Strategic Plan*, April 2006. Available online: www.sgpwa.com/pdfs/Strategic_Plan.pdf, accessed March 7, 2007, pp. 2-3.
- San Gorgonio Pass Water Agency (SGPWA), 2007b. *Addendum No. 2 to the SGPWA Water Importation Project Final EIR*. January 31, 2007, revised April 11, 2007. Prepared by CDM, Irvine, CA.
- San Gorgonio Pass Water Agency (SGPWA), 2007c. *Addendum No. 3 to the SGPWA Water Importation Project Final EIR*. January 31, 2007. Prepared by CDM, Irvine, CA.
- San Marino Environmental Associates, 2008. Memorandum: Distribution and Habitat of the Santa Ana Sucker and the Santa Ana Speckled Dace. March 21, 2008.
- Santa Ana Regional Water Quality Control Board (RWQCB), 1995. *Santa Ana River Basin Water Quality Control Plan*.

- Santa Ana Regional Water Quality Control Board (RWQCB), 2002. National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements, NPDES No. CAS618036, Order No. R8-2002-0012.
- Santa Ana Regional Water Quality Control Board (RWQCB), 2006. Proposed 2006 CWA Section 303(d) List of Water Quality Limited Segments, Santa Ana Regional Board.
- Santa Ana Watershed Project Authority Planning Department. 2002. *Santa Ana Integrated Watershed Plan, Volume 1: Water Resources Component*. June.
- Saremi, Kameron, 2008. Personal phone communication with Kameron Saremi, SARWQCB Project Manager for environmental investigation of the 1500 Crafton Avenue property, January 2, 2008.
- Sawyer, J.O., Jr., and T. Keeler-Wolf, 1995. *A Manual of California Vegetation*. California Native Plant Society, Sacramento, California.
- Scott, E., 2006. Paleontology literature and records review, proposed water pipeline, Mentone region, San Bernardino County, California.
- Scott, T.A. and M. L. Morrison, 1990. *Natural history and management of the San Clemente loggerhead shrike*. Proceedings of the Western Foundation of Vertebrate Zoology 4:23-57.
- Skinner, M.W. and B.M. Paulik, 1994. *California Native Plant Society Inventory of Rare and Endangered Vascular Plants of California*. California Native Plant Society, Sacramento, California.
- Smith, R.L., 1980. *Alluvial Scrub Vegetation of the San Gabriel River Floodplain*. California. Madrono 27:126-138.
- South Coast Air Quality Management District (SCAQMD), 1993. *CEQA Air Quality Handbook*, April 1993.
- South Coast Air Quality Management District (SCAQMD), 2000. *An Air Toxics Control Plan for the Next Ten Years*, March 2000.
- South Coast Air Quality Management District (SCAQMD), 2005a. *Risk Assessment Procedures for Rules 1401 and 212*. Revised July 2005.
- South Coast Air Quality Management District (SCAQMD), 2005b. *Rule 403 – Fugitive Dust*. June 3, 2005.
- South Coast Air Quality Management District (SCAQMD), 2007a. *Draft Final 2007 Air Quality Management Plan*. May 2007.
- South Coast Air Quality Management District (SCAQMD), 2007b. *SCAQMD Air Quality Significance Thresholds*. December, 2007.

- South Coast Air Quality Management District (SCAQMD), 2008. *Multiple Air Toxics Exposure Study in the South Coast Air Basin – Draft Report*. January 2008. Available online: <http://www.aqmd.gov/prdas/matesIII/matesIII.html>, accessed May 6, 2008.
- Southern California Association of Governments (SCAG), 2001. *State of the Region*.
- Southern California Association of Governments (SCAG), 2002. *State of the Region*.
- Southern California Association of Governments (SCAG), 2004. *City Projections*.
- Southern California Association of Governments (SCAG), 2004. *Regional Transportation Plan*.
- Southern California Association of Governments (SCAG), 2005. *State of the Region*.
- Stebbins, R.C., 2003. *A Field Guide to Western Reptiles and Amphibians*. 3d ed. Houghton Mifflin, Boston.
- Tetra Tech, Inc., 2007. Quarterly Status Report, Former LPC Site Investigation Order 94-11 and Crafton-Redlands Plum Cleanup and Abatement Orders 94-37 and 97-58, as amended by 01-56. Submitted to California Regional Water Quality Control Board, Santa Ana Region.
- The Patwin and their Neighbors. 1932. *University of California Publications in American Archaeology and Ethnology* 29(4):253-423. Berkeley.
- Twoop Timelines, 2007. Available online: http://www.twoop.com/food_drink/archives/2005/10/7up.html, accessed April 26, 2007.
- U. S. Army Corps of Engineers (USACE), 1987. *1987 Corps of Engineers Wetland Delineation Manual*.
- U.S. Army Corps of Engineers (USACE), 2000. Seven Oaks Dam. Available online: <http://www.spl.usace.army.mil/resreg/htdocs/7oaks.html>, accessed August 8, 2007.
- U. S. Army Corps of Engineers (USACE), 2007. Regional Supplement to the *Corps of Engineers Wetland Delineation Manual: Arid West Region*.
- U.S. Department of Agriculture Forest Service (USFS), 2007. San Bernardino National Forest—About Us. Available online: <http://www.fs.fed.us/r5/sanbernardino/about/index.shtml>, accessed on July 6, 2007.
- U.S. Department of the Interior (DOI), 1986. *Guidelines for Completing National Register Forms*. National Register Bulletin 16, U.S. Department of the Interior, National Park Service.
- U.S. Department of the Interior (DOI), 1991. *How to Apply the National Register Criteria for Evaluation*. National Register Bulletin 15, Washington, DC: National Park Service, Interagency Resources Division.
- U.S. Department of the Interior (DOI), 1996. Heritage Preservation Services, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. Washington, D.C.

- U.S. Department of Transportation (USDOT), 1995. *Highway Traffic Noise Analysis and Abatement Policy and Guidance, June 1995*. Federal Highway Administration Office of Environment and Planning Noise and Air Quality Branch.
- U.S. Environmental Protection Agency (USEPA), 1971. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*.
- U.S. Geological Survey (USGS), 2005. *Hydrology, Description of Computer Models, and Evaluation of Selected Water-Management Alternatives in the San Bernardino Area, California*. Open-File Report 2005-1278, in cooperation with the San Bernardino Valley Municipal Water District.
- U.S. Geological Survey (USGS), 2006. *Geology, Ground-Water Hydrology, Geochemistry, and Ground-water Simulation of the Beaumont and Banning Storage Units, San Geronio Pass Area, Riverside County California*. Prepared in cooperation with the San Geronio Pass Water Agency.
- URS Corporation (URS), 2007a. *County of San Bernardino 2007 General Plan*. Adopted March 2007, effective April 2007.
- URS Corporation (URS), 2007b. *County of San Bernardino 2007 General Plan Final Environmental Impact Report (SCH# 2005101038)*. February 2007.
- Wagner, H.M., 1990. Paleontologic resources. In *Cultural and paleontologic resources in the Santa Susanna and Santa Monica Mountains, Los Angeles County, California*, Moratto, M. J., pages 11-37. Submitted to Brown and Caldwell, Walnut Creek, California. 1-132.
- Wallace, W. J., 1978. Post-Pleistocene Archeology, 9000 to 2000 B.C. In *California*, edited by R.F. Heizer, pages 25-36. Handbook of North American Indians, vol. 8, W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D. C.
- Warren, C.N., 1984. The Desert Region. In *California Archaeology*. Coyote Press, Salinas, California. Reprinted from 1984, Academic Press, Orlando, Florida.
- Westman, W.E., 1981. Diversity relations and succession in Californian coastal sage scrub. *Ecology* 62: 439-455.
- Williams, D.F., 1986. *Mammalian Species of Concern in California*. State of California. The Resources Agency. California Department of Fish and Game. Sacramento, California.
- Wilson, N. L. and A. H. Towne Nisenan, 1978. In *California*, edited by R. F. Heizer, pp. 387-97. Handbook of North American Indians, vol. 8, W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D. C.

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CHAPTER 11

Glossary

acre-foot (af)	The volume of water that would cover 1 acre to a depth of 1 foot. Equal to 1,233.5 cubic meters (43,560 cubic feet).
Article 21 water	An article of the SWP long-term water supply contracts between DWR and each individual contractor, which addressed non –Table A water that becomes available on an intermittent, interruptible basis. The subdivisions of the original article defined SWP water types: set priorities and procedures to reduce deliveries of Article 21 water; and provided provisions for schedules, rates, power, costs, and other considerations.
beneficial use	A use of water resources that benefits people or nature as defined by regional water quality control plans
beneficial uses	Those uses of water as defined in the State of California Water Code (Chapter 10, Part 2, Division 2), including but not limited to, agricultural, domestic, municipal, industrial, power generation, fish and wildlife, recreation, and mining.
best management practices	Methods or techniques that are recognized to be the most effective and practical means of achieving an objective, such as preventing pollution or avoiding other adverse environmental effects, while optimizing the use of other resources.
Biological Opinion	Document issued under the authority of the Federal Endangered Species Act stating the findings of the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service as to whether a Federal action is likely to jeopardize the continued existence of a threatened or endangered species or result in the destruction of adverse modification of critical habitat.

borrow area	An excavated area or pit created by the removal of earth material to be used as fill in a different location.
CALFED Bay-Delta Program (CALFED)	Joint Federal and state program to address water-related issues in the Sacramento-San Joaquin Delta.
California Environmental Quality Act (CEQA)	Act requiring California public agency decision-makers to document and consider the environmental impacts of their actions. Also requires an agency to identify ways to avoid or reduce environmental damage and to implement those measures where feasible. Provides means to encourage public participation in the decision-making process.
Central Valley Project (CVP)	Multiple-purpose Federal water project operated by the Bureau of Reclamation in California extending from the Cascades to the Tehachapi Mountains. Consists of 20 dams and reservoirs, 11 power plants, and 500 miles of major canals, as well as conduits, tunnels, and related facilities. Manages some 9 million acre-feet of water.
channel	Natural or artificial watercourse, with a defined bed and banks to confine and conduct continuously or periodically flowing water.
corrosive soil	Soils that deteriorates metal due to an interaction with materials in the soil; corrosion generally occurs in soils with high moisture content, high electrical conductivity, high acidity, and high dissolved salts.
criteria air pollutants	Pollutants that are the primary focus of regulatory agencies as indicators of ambient air quality, which include ozone, carbon monoxide (CO), nitrogen dioxide (NO ₂), sulfur dioxide (SO ₂), particulate matter (PM), and lead. These are the most prevalent air pollutants known to be harmful to human health, and extensive documentation on health-effects criteria is available for them.
critical habitat	An area designated as critical habitat listed in 50 CFR Parts 17 or 226 (50 CFR Section 402.02); specific geographic areas, whether occupied by special-status species or not, that are determined to be essential for the conservation and management of the special-status species, and that have been formally described in the Federal Register.

cubic foot per second (cfs)	A measurement of water flow equivalent to one cubic foot of water passing a given point in a second.
cultural resource	An aspect of a cultural system that is valued by or significantly representative of a culture or that contains significant information about a culture. Properties such as landscapes or districts, sites, buildings, structures, objects, or cultural practices that are usually greater than 50 years of age and possess architectural, historic, scientific, or other technical value.
cumulative impact	Under CEQA, defined as the change in the environment that results from the incremental impact of the project when added to other, closely related past, present, and reasonably foreseeable probable future projects. For NEPA purposes, defined in Council of Environmental Quality (CEQ) Regulations as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions.
decibel (dB)	<p>A unit-less measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.</p> <p>An A-weighted dB (dBA) is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.</p>
delivered water	General term for water provided to SGPWA and SBVMWD untreated- and treated-water customers.
Delta	In this report, “Delta” refers to the delta formed by the Sacramento and San Joaquin Rivers.
dewater	To remove water.
diversion	A location where water is removed from a water body (river, creek, reservoir, etc.) for use in another location.

East Branch Extension	As the SWP reaches the southern base of the Tehachapi Mountains, the aqueduct splits into two branches (the East Branch and West Branch). The East Branch continues through the Tehachapi East Afterbay, Alamo Powerplant, Pearblossom Pumping Plant, and Mojave Siphon Powerplant and discharges into Lake Silverwood near the Cajon Pass. The water is conveyed through a tunnel under the San Bernardino Mountains. The 28-mile-long Santa Ana Pipeline then takes it underground to Lake Perris, the southernmost termination of the SWP. The East Branch Extension delivers water from the Devil Canyon Power Plant Afterbay to the eastern part of San Bernardino Valley, Yucaipa Valley and the San Gorgonio Pass area in San Bernardino and Riverside counties.
endangered species	Any species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that is in serious danger of becoming extinct throughout all or a significant portion of its range. Official Federal designations of endangered species are made by the USFWS or NMFS and published in the Federal Register. Species are listed under the California Endangered Species Act by the California Department of Fish and Game.
Endangered Species Act (ESA)	The Federal or state acts administered by the USFWS/NMFS and California Department of Fish and Game, respectively, to list and protect animal and plant species that are listed as threatened or endangered, are formally recognized candidates for listing, or are declining to a point where they may be listed.
Environmental Impact Report (EIR)	A detailed statement (i.e., report) prepared under the California Environmental Quality Act by a state or local agency describing and analyzing the significant environmental effects of a project and discussing ways to mitigate or avoid the effects.
erosion	The gradual wearing away of land by water, wind, and general weather conditions; the diminishing of property by the elements. With regard to levees specifically: loss of levee material as a result of the effects of channel flows, tidal action, boat wakes, and wind-generated waves.
expansive soils	Soils that shrink and swell as a result of moisture changes.

floodplain	Any land area susceptible to inundation by floodwaters from any source.
100-year flood	The flood having a one percent chance of being equalled or exceeded in magnitude in any given year. Contrary to popular belief, it is not a flood occurring once every 100 years.
flow	The volume of water passing a given point per unit of time.
peak flow	Maximum instantaneous flow in a specified period of time.
groundwater	Any water naturally stored underground in aquifers, or that flows through and saturates soil and rock, supplying springs and wells.
habitat	The specific area or environment in which a particular type of animal or plant lives.
Important Farmland	Farmland categories mapped by the Farmland Mapping and Monitoring Program (FMMP). Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance are often described together under the term "Important Farmland."
levee	An embankment raised to restrict a river to a defined channel.
liquefaction	The process in which soil loses cohesion when subject to seismic activity (i.e., shaking).
mitigation	One or all of the following: (1) avoiding an impact altogether by not taking a certain action or parts of an action; (2) minimizing an impact by limiting the degree or magnitude of an action and its implementation; (3) rectifying an impact by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating an impact over time by preservation and maintenance operations during the life of an action; and/or (5) compensating for an impact by replacing or providing substitute resources or environments.

Notice of Intent (NOI)	The notice issued by a Federal agency to publicly announce its intention to prepare an environmental impact statement, pursuant to the National Environmental Policy Act.
Notice of Preparation (NOP)	The notice issued by a State or local agency to publicly announce its intention to prepare an environmental impact report, pursuant to the California Environmental Quality Act.
recycled water	Wastewater that becomes suitable for a specific beneficial use as a result of treatment
reservoir	An artificially impounded body of water.
responsible agency	As per the State CEQA Guidelines, a public agency other than the lead agency that has discretionary approval over a project.
riparian area	The land adjacent to a natural watercourse such as a river or stream. Riparian areas support vegetation that provides important wildlife habitat, as well as important fish habitat when sufficient to overhang the bank or fall into the water.
Sacramento-San Joaquin Delta (Delta)	The legal Delta, as described in the California Water Code Section 12220, generally extends from Sacramento to the north, Tracy to the south, Interstate 5 to the east, and Collinsville to the west. The Delta covers approximately 738,000 acres.
sedimentation	The phenomenon of sediment or other fine particulates entering a water body, or being disturbed from the bottom of a water body such that they move downstream and settle on the substrate in other aquatic areas.
seiche	A wave on the surface of a lake or landlocked bay caused by atmospheric or seismic disturbances
seismicity	The frequency, intensity, and distribution of earthquake activity in a given area.
South Bay Aqueduct	A State Water Project facility that conveys water from Bethany Reservoir to Alameda and Santa Clara Counties.

special-status species	Federal and state classifications for plant and animal species that are listed as threatened or endangered, are formally recognized candidates for listing, or are declining to a point where they may be listed.
State Water Project (SWP)	California's largest water supply project operated and maintained by the California Department of Water Resources that stores surplus water during wet periods and later distributes it to areas of need in the San Francisco Bay area, northern California, San Joaquin Valley, and southern California. SWP facilities include 23 dams and reservoirs, 18 pumping plants, 4 generating-pumping plants, 5 hydroelectric power plants, and approximately 600 miles of canals and pipelines.
Harvey O. Banks Delta Pumping Plant	The SWP export pumping plant in the south Delta. The plant is located downstream of Clifton Court Forebay.
storm water	Untreated surface runoff into a body of water during periods of precipitation.
Storm water Pollution Prevention Plan (SWPPP)	Required to be developed and implemented when an entity is obtaining a General Permit under the National Pollutant Discharge Elimination System (NPDES). The SWPPP has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of storm water discharges, and (2) to describe and ensure the implementation of best management practices to reduce or eliminate sediment and other pollutants in storm water as well as non-storm water discharges.
subsidence	A decrease in ground surface elevation in the Delta, which results primarily from peat soil being converted into gas.
table A	A prorated amount of water that the SWP can deliver to a contractor in a particular year, and can be equal to 100% of a contractors Table A or some other reduced percentage.
take	Defined in the Federal Endangered Species Act as "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct" on special-status species covered under the act.

terrestrial species	Types of species of animals and plants that live on or grow from the land.
threatened species	Legal status afforded to plant or animals species that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range, as determined by the U.S. Fish and Wildlife Service or NMFS for Federal species and by the California Department of Fish and Game for State species.
total organic carbon (TOC)	A measure of organic matter content in water, which plays a significant role in aquatic ecosystems and has direct implications to drinking water treatment, including the potential for formation of disinfection byproducts.
treated water	Water treated at CCWD treatment plants and delivered to CCWD treated-water customers.
turbidity	A measure of the cloudiness of water caused by the presence of suspended matter. Turbidity in natural waters may be composed of organic and/or inorganic constituents, and has direct implications to drinking water treatment.
water right	A legal entitlement, granted as a permit or license from the California State Water Resources Control Board, authorizing water to be diverted from a specified source and put to beneficial, nonwasteful use.
waters of the U.S.	As defined in the Clean Water Act Section 404, waters of the U.S. applies only to surface waters, rivers, lakes, estuaries, coastal waters, and wetlands. Not all surface waters are legally waters of the U.S. Generally, those waters include interstate waters and tributaries, intrastate waters and tributaries used in interstate and/or foreign commerce, territorial seas at the cyclical high-tide mark, and wetlands adjacent to the above.
watershed	A region or area that ultimately drains to a particular watercourse or body of water.

wetland	A zone that is periodically or continuously submerged or has high soil moisture, has aquatic and/or riparian vegetation components, and is maintained by water supplies significantly in excess of those otherwise available through local precipitation.
Williamson Act	The California Land Conservation Act of 1965, commonly known as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use for 10 years. In return, landowners receive property tax assessments that are based on farming and open space uses as opposed to full market value.

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